

6

Order Syngnathae

Maxillary near or close to premaxillary, again solidly united though with distinct sutures. Articular bone of lower jaw with small supplemental bone. Lower pharyngeal bones completely united. Branchiostegals 9 to 15. Vertebral numerous, 45 to 70, abdominal more numerous than caudal. Ribs begin on first vertebra. Scapula suspended to cranium by posttemporal bone, which slender and forked. Air bladder large. Intestinal canal simple, without pyloric appendages. Lateral line low or along lower side of body, concurrent with ventral profile

Tenthia atramentatus Jordan and
Evermann, Bull. U. S. Fish Comm., vol.
 22, 1902 (1903), p. 198. Honolulu.

Hepatus atramentatus Fowler and Ball,
 Bishop Mus. Bull., no. 26, 1925 (1926), p. 19
 (Laysan).

Tenthia matoidea (part) Jenkins, Bull.
 U. S. Fish Comm., vol. 22, 1902 (1903), p. 478
 (Honolulu). — Jordan and Evermann, l.c.,
 vol. 23, pt. 1, 1903 (1905), p. 387 (Honolulu).

Hepatus nigricans (part) Jordan and Seale,
 Bull. Bur. Fisher., vol. 25, 1905 (1906), p.
 351 (Apia).

Hepatus elongatus (part) Jordan and Seale,
 l.c., p. 352 (Apia).

Tenthia elongatus (~~from Lapeire~~) Kendall
 and Goldborough, Mem. Mus. Comp.
 Zool., vol. 26, no. 7, 1911, p. 308 (Trich).

7

of body, of peculiar structure
and often not quite reaching
caudal. Fins without spines.
No adipose fin. Ventrals
abdominal, rays more than 5.

A large group of fishes,
well represented in all tropical
seas. According to Regan they
comprise an isolated assemblage
without evident relationship to
any other fishes though showing
certain affinities with the
toothed minnows or cyprinodonts.
In earlier taxonomic arrangements
of fishes the Syngnathii
marked the beginning of the
series Physoclisti, characterized
by the absence of a duct connecting
the air bladder with the

660

Heniochus acuminatus (Linnaeus).

Chaetodon acuminatus Linnaeus, Syst. Nat.,
ed. 10, 1758, p. 272. Indies. — Linnaeus, l.c.,
ed. 12, 1766, p. 460. — Gmelin, Syst. Nat.
Linnaeus, 1789, p. 1241 (India). — Walbaum, Arted.
Pisc., vol. 3, 1792, p. 410 (in Linnaeus). —
Forster, Ann. Indica, 1795, p. 14. — Schneider,
Syst. Ichth. Bloch, 1801, p. 229 (India). —
Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp.
455, 479 (on Linnaeus).

Chaetodon acuminatus Bonnaterre, Tabl. Ichth.,
1788, p. 80 (Indies).

Heniochus acuminatus Cuvier, Hist. Nat. Poiss.,
vol. 7, 1831, p. 74⁹⁶ (copied). — Jordan and
Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1,
1903 (1905), p. 376, plate 55 (Hawaii). —
Evermann and Seale, Bull. Bur. Fisher., vol.
26, 1906 (1907), p. 87 (Bulan, San Fabian). —
Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 510

alimentary canal. In contrast
were the more primitive groups
of bony fishes or Physostomi,
all with a persistent duct.

659
8387. Port Dupon, Leyte Island.
March 17, 1909. Length 192 mm.

A 701 and A 702. Si Amil Island.
September 26, 1909. Length 225 to 227 mm.

7706. Ulugan Bay near Rita Island.
December 29, 1909. Length 173 mm.

A 1153 and A 1154. Game Road, Gillolo
Island. December 1, 1909. Length 152 to 170 mm.

A 1598. Hoo Wan, Formosa. January 29, 1910.
Length 200 mm.

Analysis of Suborders

9

a.¹ mouth usually large; third upper pharyngeals moderately enlarged, separate, fourth usually present; scales very small.

Scombrocoidea.

a.² mouth small; third upper pharyngeals strongly enlarged, together forming somewhat convex ovoid plate; scales rather large.

Eyoctoidea.

and all of caudal fin cadmium orange, becoming slightly dusky toward tips of soft rays; scales below dorsal posteriorly black, especially marginally, center of each with steel bluish area, becoming smaller lower down toward anal base. Front and vertical edge of anal purplish black. Pectoral base blackish, including all ray bases and all of scaly portion, rest lemon yellow. Ventral black.

8717. Batan Island, Rapurapu Island.
June 5, 1909. Length 185 mm.

A963 and A964. Binang Unang Island.
November 17, 1909. Length 210 to 219 mm.

8239. Galvaney Island, Ragay Gulf.
March 9, 1909. Length 238 mm.

9348. Murcielago Bay, Mindanao. April
21, 1909. Length 180 mm.

10

Sub-Order Scombrocoidea

Mouth typically large, jaws usually extended and narrowed forward. Rami of mandible usually united by interlocking of row of inner extensions. Maxillaries firmly joined with premaxillaries. Third upper pharyngeals moderately enlarged, separate, fourth usually present. Lower pharyngeal triangular or long and narrow. Pharyngeal teeth usually villiform or granular, some of teeth of principal plates often compressed, tricuspid. Scales small.

8148, 8149, 8162 (No. 67,354, U.S. N.M.
Type). Alibijaban Island, Ragay Gulf,
Luzon. Length 217 to 220 mm. Interorbital
below horns and still lower white,
slightly dusky before cheek. Bar from
front of dorsal downward includes all
of head posteriorly except opercle tip and
all of breast to ventral bases silvery white,
upper portion slightly dusky with somewhat
brassy tinge. Third dorsal spine gray,
color continued as lighter band diagonally
across side through middle of anal.
First 2 dorsal spines black, color passes
downward to include all of ventral bases
and all of abdominal region darker,
scales margined darker brown with
pearls or purplish centers. Dorsal from
tip of fifth spine to base of sixth and
diagonally along its basal edge, including
upper and posterior caudal peduncle.

11

Analysis of Families

a.¹ no finlets. Belonidae.

a.² Dorsal and anal with detached finlets. Scombresocidae.

$1\frac{2}{5}$ to $1\frac{2}{3}$ in head; A. III, 16, I or 17, I,
 third spine $1\frac{3}{5}$ to $1\frac{4}{5}$, fourth ray $1\frac{1}{8}$ to
 $1\frac{1}{4}$; least depth of caudal peduncle 3 to
 $3\frac{1}{8}$; caudal truncate, slightly convex
 behind with age, $1\frac{2}{5}$ to $1\frac{3}{5}$; pectoral
 1 to $1\frac{1}{8}$; ventral 1 to $1\frac{1}{5}$.

Largely dark brown. Pale or whitish
 band from middle of interorbital down
 over nostrils to chin, where broader. Lips
 similarly pale. Broad pale to whitish
 vertical band from predorsal above
 tubercle down including greater post-
 ocular region to chest, where greatly
 widened down to ventrals. Dorsals,
 caudal and pectorals all pale to
 whitish. This leaves large median area
 of body dark with its front and
 hind marginal sections as broad
 blackish bands, including below vent-
 rals and anal; inner margins of

Family Belonidae

Body greatly elongate, very slender, compressed or not. Both jaws extended into beak, lower longer, still longer in young. Maxillaries grown fast to premaxillaries. Each jaw with band of small sharp teeth, besides series of longer wide set sharp conical teeth. Vertebrae 55 to 77, precaudal with strong projections to which ribs attached. Air bladder present. Ovary single. Scales very small, thin. Dorsal and anal far postmedian, rather long.

opposite. No finlets.

Carnivorous surface fishes, in many ways suggestive in superficial manner to the gar pikes. Found in all warm seas, some entering fresh water. In habits they somewhat resemble pikes, though when disturbed, or so inclined, are able to swim along the surface of the water with great rapidity, some even leaping and skipping out short distances. In the tropics when thus leaping the large species are sometimes dangerous to fishermen. They have even

been known to pierce the naked abdomens of savages.

In life all are with more or less green tints or colors, which penetrate to the bones and even the flesh. When cooked, however, the flesh becomes whitish and is well flavored. When available gars are valuable food fishes. Their sides are brilliant shining silvery or silvery white - or they may have a silvery lateral band from the head to the base of the tail fin.

Most of the gars are furnished with a dorsal lappet over the iris, serving to protect them from brilliant sunlight.

The development of the beak is variable, sometimes only the lower jaw in young being prolonged, again the jaws may be subequal or they may even have a black lateral mandibular flap in the young. The tail rounded or truncate in the young becomes emarginate or forked in some forms.

15

Gars swim at or near the surface offshore, in tidal currents, or in the open sea. In spite of their enormous jaws and terrible armament of needlelike teeth, gars can prey only on comparatively small fishes, since the gullet is too narrow to permit swallowing fish of any size. Silversides (Atherinidae), anchovies (Engraulidae), sardines (Clupeidae), young caesios, and other small slender fishes seem to comprise the bulk of their food, at least around the reefs of the Sulu and Celebes Seas. If a half stick of dynamite is fired near a wharf in the Sulu Archipelago large numbers of silversides are always killed or stunned. At once several large gars will appear like magic from the stream, where their green backs harmonize perfectly with the color of the water, and in an incredibly short time they will snap up all the floating silversides and other small disabled fishes.

Gars swim with an undulating motion of the body and are exceedingly active. When startled they move with astonishing speed and may leap from the water several times or may skip over the surface in gigantic leaps like a ricocheting flat stone, or may rise out of the water until only the tail or posterior part of the body is left in it, just as a modern speed boat travels, shooting forward with incredible swiftness and all but flying. It sometimes happens on such occasions that a whizzing gar strikes a person with its hard bill which penetrates like an arrow, inflicting dangerous wounds, horribly lacerating the abdomen, or causing death. A snapping gar may also inflict very severe wounds with its large needlelike teeth. (Herre.)

17

Analysis of Genera

- a. Strongylurinae. Gill rakers absent or vestigial; enlarged teeth of both jaws strong spaced canines.
- b. Lower pharyngeal elongate, narrow, dentigerous plate scarcely expanded posteriorly; second and third upper pharyngeals dentigerous, fourth usually distinct and dentigerous.
- c. Body well compressed.
- d. Beak comparatively stout, moderate. Strongylura.
- d.² Beak very elongate, slender. Rhaphiobelone.
- c.² Body strongly compressed, band like. Ablennes.
- b.² Lower pharyngeal small, narrow, pointed or rounded at both ends; only 1 pair of dentigerous upper pharyngeals, the third; fresh waters of India and East Indies. Xenentodon.

a² Beloninae. Gill rakers present;
jaws comparatively slender; upper
enlarged teeth moderate, lower small
and close set; lower pharyngeal
triangular, second and third upper
dentigerous, fourth usually distinct
and dentigerous. Belone.

19

Genus Strongylura Van Hasselt
Strongylura Van Hasselt, Bull. Sci.
Nat. Ferrussac, sect. 2, vol. 2, p. 374,
1824. (Type Strongylura caudi-
maculata Van Hasselt = Belone
strongylura Van Hasselt, virtually
tantotypic.)

Tylosurus Cocco, Giorn. Sci. Lett. Sicil.,
vol. 42, no. 124, p. 18, 1833. (Type
Tylosurus cantrani Cocco =
Sphyræna acus Lacépède, monotypic.)

Stenocaulus Ogilby, Proc. Roy. Soc.
Queensland, vol. 21, p. 91, 1908.
(Type Belone breffiti Günther,
orthotypic.)

20

Thalassosteus Jordan, Evermann and
Tanaka, Proc. Cal. Acad. Sci., ser.
4, no. 20, vol. 16, p. 651, Nov. 14, 1927
(Type, Belone appendiculatus
Klunzinger, orthotypic.)

Busuanga Herre, Science, vol. 71,
p. 132, ¹⁹³⁰ (Type, Tylosurus philippinus
Herre, ~~anamniot~~ orthotypic.)

Strongylura robusta (Günther)

Belone robusta Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 242, 1866

(type locality: Red Sea; Egypt). —

Regan,

Ann. Natal. Mus., vol. 1, pt. 3, 1908,

p. 243 (Kosi Bay).

Belone robustus Klunzinger, Verh. zool.
bot. Ges. Wien, vol. 21, p. 579, 1871
(Red Sea).

Tylosurus robustus Regan, Ann. Mag.
Nat. Hist., ser. 8, vol. 7, p. 332, 1910
(name). — Gilchrist and Thompson,

Ann. Durban Mus., vol. 1, pt. 4, p. 310,

1917 (compiled).

21

Body very slender, cylindrical or little compressed. Head long. Both jaws extended as beak, lower somewhat longer, much longer in young and very young often resembles hemiramphids. Each jaw with band of small, sharp teeth, besides series of longer, wide set, sharp, conic, unequal teeth. No teeth on vomer or palatines. Gill openings wide. Gill rakers absent. Bones usually greenish. Scales small to very small, thin. Lateral line inferior, runs along lower side of belly, sometimes forming elevated keel on caudal peduncle. No finlets. Dorsal fin mostly elevated in front, somewhat or even considerably behind anal, all rays of both fins connected by membranes. Caudal short, unequally lunated or forked, truncate or rounded. Pectorals moderate. Ventrals small, latter inserted behind middle of body.

Genus Petalichthys Regan
Petalichthys Regan,

22

^{largest} Rather large voracious fishes,
reaching a meter and a half in length,
in most all tropical seas, a few
entering rivers. In these gars the
changes with age are marked, as
in the young the greatly prolonged lower
jaw is always longer, though less so
with age.

Herre says the larger species are
much feared by fishermen, as when
frightened they may skip along the
surface of the water at terrific
speed, hurtling through the air in
great leaps and inflicting frightful
injuries upon or even killing
anyone unlucky enough to be in their
way. They also damage small nets,
through which they easily tear their
way.

43

Three nomina nuda have been given
for Queensland species by Saville Kent:

Strongylura staigeri (Saville-Kent)

Belone staigeri Saville-Kent, Great Barrier
Reef, p. 370, 1895 (type locality: Queensland).
Tylosurus staigeri McCulloch, Austral. Mus.
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).

Strongylura tyrannus (Saville-Kent).

Belone tyrannus Saville-Kent, Great Barrier
Reef, p. 370, 1895 (type locality: Queensland).
Tylosurus tyrannus McCulloch, Austral. Mus.
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).

Strongylura vorax (Saville-Kent).

Belone vorax Saville-Kent, Great Barrier
Reef, p. 370, 1895 (type locality: Queensland).
Tylosurus vorax McCulloch, Austral. Mus.
Mem., vol. 5, pt. 1, p. 100, June 29, 1929 (reference).

Analysis of species

44

a. End of mandible without terminal keel below.

b. Strongylura. Caudal truncate, rounded behind with age, lateral line not forming keel on caudal peduncle.

c. D. II, 10 to II, 13; A. II, 13 to II, 15.

d. Scales 125; no caudal spot.

d.² Scales 170; caudal with black basal spot. uvillii.

c.² D. II, 14 to II, 18; A. II, 17 to II, 23. strongylura.

e. Body subcylindrical or compressed.

f. Head $2\frac{1}{2}$ to $2\frac{7}{10}$. incisa.

f.² Head $2\frac{4}{5}$ to $3\frac{1}{4}$.

g. Scales 185 to 200. leura.

g.² Scales 300. tahitiensis.

e.² Body strongly compressed. breffti.

b.² Tylosurus. Caudal forked (emarginate or nearly truncate in young); lateral line forms keel on caudal peduncle.

h. Last dorsal rays not elongated or black.

i. Caudal peduncle wide as deep.

25
j.¹ D. II, 17 or II, 18; A. II, 18; eye
 $2\frac{1}{3}$ in postocular. groeneri.

j.² D. II, 18 or II, 19; A. II, 17 to II, 19;
eye 3 in postocular. macbayana.

j.³ D. II, 19; A. II, 22 to II, 24.

k.¹ Eye 2 in postocular. terebra.

k.² Eye $3\frac{1}{2}$ in postocular.

l.⁴ D. II, 23 or II, 24; A. II, 20 or
II, 21; eye 2 to $2\frac{1}{4}$ in postocular. ferox.

l.¹ Mandible tip little or not
projecting. timucoides.

l.² Mandible tip protruded
pad, its upper profile
continuous with that of
upper jaw profile. philippina.

i.² Caudal peduncle deeper than wide.

m.¹ D. II, 17; A. II, 21 to II, 24.

anastomella.

m.² D. II, 19 to II, 21; A. II, 18 or
II, 19.

n.¹ Eye 2 in postocular.

crocodila.

n.² Eye $2\frac{3}{5}$ to $2\frac{4}{5}$ in
postocular. punctulata.

(26)

m.³ D. II, 20; A. II, 21; eye 2
in interorbital. gavialoides.

m.⁴ D. II, 22; A. II, 20; eye
1 1/4 in interorbital. auliceps.

h.² Last dorsal rays elongated,
black. indica.

a.² Thalassosteus. End of mandible with
small-deep terminal keel below.

appendiculata.

Strongylura wvillii (Valenciennes)

Belone wvillii Valenciennes, Hist.
Nat. Poiss., vol. 18, p. 444, 1846 (type
locality: Vanicolo). — Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 247, 1866
(copied); Journ. Mus. Godeffroy,
vol. 8, pt. 16, p. 350, 1909 (copied).

Tylosurus wvillii Whitley, Journ.
Pan Pacific Inst., vol. 3, No. 1, p. 11,
Jan. - March 1928 (Santa Cruz
Island).

Strongylura wvillii Fowler, Mem.

Bishop Mus., vol. 10, p. 72, 1928
(compiled); vol. 11, no. 5, p. 319, 1931
(compiled).

9950, 9951. Doc Can, Island,
Vulu Sea. January 7, 1910. Length
128 to 138 mm.

52528 U. S. N. M. Apia, Samoa.
Bureau of Fisheries. Length 128 to
193 mm. 4 examples.

75899 U. S. N. M. Borneo. H. C.
Raven. Length 189 mm.

31668 to 31672 A. N. S. P. Apia.
Bureau of Fisheries. Length 138
to 183 mm.

Belone macrolepis Bleeker, haturk.
 Tijds. Nederl. Indië, vol. 12, p.
 (217) 225, 1856 (type locality: hias);
 vol. 13, p. 374, 1857 (Vangi). —
Günther, Cat. Fishes Brit. Mus.,
 vol. 6, p. 246, 1866 (type). — Meyer,
 Anal. Mus. Esp. Hist. Nat. Madrid,
 vol. 14, p. 38, 1885 (Manado).

Mastacembelus macrolepis Bleeker,
 Atlas Ichth. Ind. Néerl., vol. 6,
 p. 45, pl. () 258, fig. 1, 1866-72
 (hias).

Gylosurus macrolepis Weber and Beaufort,
 Fishes Indo Austral. Archip., vol. 4,
 p. 122, 1922 (hias). — Herre, Philippine
 Journ. Sci., vol. 36, no. 2, p. 222, June
 1928 (Zamboanga; Gingoog; Agusan River
mouth).

12448, 12449. Bugsuk Island. 1256
January 5, 1909. Length 157 to 170 mm.

17404, 17405. Candaraman Island.
January 4, 1909. Length 175 to 177 mm.
19980. Cebu market. September 3,
1909. Length 94 mm.

10554, 13206. Jolo Island.
March 7, 1908. Length 143 to 203 mm.

11281, 17650, 17651. Pandanon
Island. March 23, 1909. Length
138 to 141 mm.

15919. Pangasinan Island, Jolo.
February 13, 1908. Length 179 mm.

18605. Tambun Sigambul,
Tonguil Island, south of Zamboanga.
September 14, 1909. Length 188 mm.

8216, 19830. Tataan. February 20,
1908. Length 108 mm.

29

Mastacembelus crocodilus (not Le
Sueur, Nederl. Tijds. Dierk., vol.
3, p. 266, 1866 (Java, Singapore,
Celebes, Moluccas).

Mastacembelus chorum (not Rüppell)
Bleeker, Atlas Ichth. Ind. Néerl.,
vol. 6, p. 47, pl. () 256, fig. 2,
1866-72.

Tylosurus leuroides (not Bleeker)
Seale and Bean, Proc. U. S. Nat.
Mus., vol. 33, p. 240, 1907 (Zamboanga).

1538

Therapon brachycentrus Peters,
Monatsber. Akad. Wiss. Berlin, 1869,
p. 704 (on Peters 1864).

Therapon (Datria) brachycentrus
Bleeker, Atlas Ichth. Ind. Néerl.,
vol. 7, 1873-76, p. 115 (copied).

Depth $2\frac{1}{2}$ to $2\frac{3}{4}$; head 3 to $3\frac{1}{6}$,
width $1\frac{7}{8}$ to 2. Snout $3\frac{1}{4}$ to $3\frac{1}{2}$
in head; eye $3\frac{2}{3}$ to 4, $1\frac{1}{8}$ to $1\frac{1}{3}$
in snout, greater than interorbital
in young to equal with age;
maxillary reaches eye or $\frac{1}{5}$ in eye,
expansion 2 to $2\frac{1}{5}$, length 3 to $3\frac{1}{4}$
in head; teeth villiform, in
moderately wide bands in jaws,
outer row little enlarged; interorbital
 $3\frac{3}{4}$ to $3\frac{4}{5}$, nearly flat; preopercle
edge finely serrated. Gill rakers
9 or 10 + 18 or 19, lanceolate, $\frac{1}{2}$ of
gill filaments and latter $1\frac{3}{5}$ in eye.

Depth 14 to $16\frac{3}{4}$, body robust, largely cylindrical, caudal peduncle compressed; head $2\frac{1}{5}$ to $2\frac{1}{3}$, width $7\frac{1}{5}$ to $8\frac{1}{3}$. Snout $1\frac{2}{5}$ in head from snout tip; eye $11\frac{1}{8}$ to 13, $7\frac{4}{5}$ to $8\frac{4}{5}$ in snout, 1 to $1\frac{1}{6}$ in interorbital; maxillary reaches $\frac{1}{5}$ to $\frac{1}{4}$ in eye, length to front point 2 to $2\frac{3}{4}$ in head posteriorly; canines inclined little posteriorly; interorbital $10\frac{3}{4}$ to 4, level, with moderate and rather deep median groove.

Scales 112 or 113 in lateral axial series to caudal base and 8 or 9 more on latter; 80 to 92 predorsal forward to occiput; 12 or 13 on postocular to hind preopercle edge; 10 above lateral line to dorsal origin. Scales with 52 to

50663 U.S.N.M. Hilo, Hawaii.

Bureau of Fisheries. Length 340 mm.
As Etelis courus.

52812 U.S.N.M. Hawaiian Islands.

Bureau of Fisheries. Length 280? mm.
As Etelis courus.

3 examples A.N.S.P. Honolulu.

1922. Henry W. Fowler. Length 250 to
400 mm.

86 basal parallel circuli, absent apically.

D. II, 11 or II, 12, first branched ray 5 to $5\frac{1}{5}$ in total head length; A. II, 14, first branched ray $4\frac{1}{5}$ to $4\frac{3}{5}$; least depth of caudal peduncle $1\frac{1}{8}$ to $1\frac{1}{5}$ in eye; caudal $3\frac{4}{5}$ to $4\frac{1}{4}$ in total head, truncate behind; pectoral 4 to $4\frac{1}{8}$; ventral $6\frac{1}{3}$ to 7, reach $1\frac{3}{4}$ to 2 to vent.

Back brown, also head above. Sides and lower surfaces paler to whitish, with silvery tinge. Fins all pale brownish, with dark neutral gray blotch at pectoral basally and more vivid inside fins. On membranes close to each fin ray and on fin ray itself median dusky area, often as blackish bordering line.

silvery reflections. Iris pale yellowish brown. Fins all pale or very light in color.

Mauritius, Bourbon, Reunion, Seychelles, Japan, Hawaii. Also in the Atlantic (West Indies). A large and valued food fish, brilliant red in life, reaching a length of 1018 mm. With age the caudal lobes prolonged slender points.

50662 U.S.N.M. Honolulu, Bureau of Fisheries. Type of Etelis ovatus.

East Indies, Philippines,
Vanicolo, Santa Cruz Island.

~~Previously known~~ Well figured by
Bleeker and allied with Strongylura
strongylura, though distinguished
chiefly by its larger scales and
the caudal fin without the
conspicuous median basal black
spot.

5167, 5168, 6114. Iloilo market,
Panay. June 1, 1908. Length 288 to
375 mm.

A442. Manila market, Luzon.
March 14, 1908. Length 321 mm.

Two examples. River at Pasacao,
Luzon. March 4, 1909. Length 183 to
208 mm.

than gill filaments or $2\frac{1}{3}$ in eye.

Scales 46 to 48 in lateral line to caudal base and 5 to 8 more on latter; 6 or 7 scales above lateral line, 12 or 13 below, 17 to 20 predorsal, 6 rows on cheeks. Suprascapula denticulate. Scales with 6 or 7 basal radiating striae; apical denticles 53 to 88, short points, with 0 to 9 transverse series of basal elements; circuli fine.

D. X, 11, V, third spine $1\frac{3}{4}$ ^{to 2}, in total \equiv head length, first ray 3 to $3\frac{1}{4}$; A. III, 8, V, third spine $3\frac{1}{4}$ to $3\frac{4}{5}$, first ray $2\frac{4}{5}$ to 3; least depth of caudal peduncle $3\frac{2}{5}$ to $3\frac{3}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{4}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$; caudal $2\frac{1}{4}$ to $2\frac{3}{4}$ in rest of body, deeply forked, lobes ending in long slender points.

Brown, little paler below, with

U. S. N. M. No. 57906. Zamboanga.
Dr. E. Mearns. Length 168 to 175 mm.
As Tylosurus leiuroides. Two examples.

U. S. N. M. No. 57949. Zamboanga.
Dr. E. Mearns. Length 72 to 98 mm.
As Tylosurus leiuroides. Two examples.

~~U. S. N. M. Nos. 49287 to 49292.~~
~~Philippines. Commercial Museum~~
~~of Philadelphia.~~

vol. 23, pt. 1, 1903 (1905), p. 242, fig. 100,
 pl. 38 (Hilo, Honolulu). — Jordan
 and Snyder, Bull. Bur. Fisher., vol.
 26, 1906 (1907), p. 213 (Honolulu).

Depth 2 to $3\frac{3}{5}$; head 3 to $3\frac{1}{8}$,
 width 2 to $2\frac{1}{4}$. Snout $3\frac{1}{2}$ to $3\frac{2}{3}$
 in head from snout tip; eye $2\frac{7}{8}$
 to $3\frac{1}{8}$, greater than snout or
 interorbital: ^{musculary reaches eye center,} ~~3 to $3\frac{1}{5}$, scarcely~~
~~expansion 3 to $3\frac{1}{5}$ in eye, length 2 to $2\frac{1}{5}$ in~~
~~elevated, level,~~
 head from upper jaw tip;
~~front of each jaw~~ with band of fine
 teeth and outer ^{row} band of larger ones,
 above pair of wide spaced slightly
 larger ^{as} canines; band of small teeth
 across vomer and on each palatine;
 interorbital $3\frac{1}{8}$ to $3\frac{1}{5}$ in head,
 scarcely elevated, level; preopercle
 edge minutely denticulated. Gill
 rakers 10 + 14, lanceolate, 2 or 3
 above as rudiments, much greater

Strongylura strongylura (Van Hasselt)

Belone strongylura Van Hasselt,

Algem. Konst- en Letterbode, vol. 1,
p. 131, 1823 (type locality: Batavia,

Java). — Martens, Preuss. Exped. Ost.

Asien, vol. 1, pp. 235, 325, 1876 (Singapore;

Pontianak). — Day, Fauna British

India, Fishes, vol. 1, p. 421, 1889. —

Weber, Siboga Exped., vol. 57, Fische,

p. 122, 1913 (Makassar).

Belone strongylurus Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 246, 1866 (China;

Pinang; India). — Day, Fishes of India,

pt. 3, p. 512, pl. 118, fig. 6, 1877 (India;

Burma; Calcutta). — Günther,
Rep. Voy. Challenger, vol. 1, pt. 6, p. 50,
1880 (Somerset). — Károli, Termesz.
Füzetek, Budapest, vol. 5, p. 181, 1881
(Canton). — Sauvage, Bull. Soc. Philom.,
Paris, ser. 7, vol. 5, p. 107, 1881 (Swatow,
China). — Weber, Zool. Erg. Reis. Nederl.
Ost. Ind., vol. 3, p. 456, 1894 (Banka,
Sumatra, Nias, Java, Madura, Celebes,
Amboina). — Elera, Cat. Fauna Filip.,
vol. 1, p. 573, 1895 (Luzon; Cavite;
Santa Cruz). — Duncker, Mitteil. Natur.
Mus. Hamburg, vol. 21, p. 169, 1903 (1904)

(Klang, Kuala Lumpur, Jeram?
 Singapore, Kuala Selangor, Kuala
 Langat). — Volz, Naturk. Tijds. Nederl.
 Indië, vol. 66, p. 177, 1907 (Siboga;
 Palembang). — Duncker, Mitteil. Natur.
 Mus. Hamburg, vol. 29, p. 257, 1911
 (compiled). — Regan, Trans. Zool. Soc.
 London, vol. 20, pt. 6, p. 276, 1914
 (Mimika River, New Guinea).

Mastacembelus strongylurus Bleeker,
 Versl. Akad. Wet. Amsterdam, ser. 2,
 vol. 2, p. 293, 1868 (Rio, Bintang);
 Atlas Ichth. Ind. Néerl., vol. 6, p. 45,

pl. (11) 257, fig. 3, 1869-72 (Java;
 Madura; Sumatra; Nias; Pinang;
 Singapore; Bintang; Banka; Borneo;
 Celebes; Amboina; New Guinea);
 Nederl. Tijds. Dierk., vol. 4, p. 149,
 1873 (reference).

Tylosurus strongylus Rutter, Proc.
 Acad. Nat. Sci. Philadelphia, 1897,
 p. 69 (Swatow). — Wu, Contrib. Biol.
 Lab. Sci. Soc. China, vol. 5, no. 4, p.
 61, fig. 50, 1929 (Amoy).

Tylosurus strongylus Seale, Philippine
 Journ. Sci., vol. 5, no. 4, p. 267, 1910.

(Borneo). — Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 322, 1911 (name).
— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 121, 1922
(Taliak and Bagan Api Api, Sumatra;
Java Sea; Batavia; Sintang, Borneo;
Makassar, Celebes). — Herre, ~~Philippine~~
Journ. Sci., vol. 36, no. 2, p. 220, pl. 1,
fig. 2, June 1928 (Bulacan; Manila;
Calabanga; Tacloban; Cagayan de
Misamis; Davao; Sandakan, Borneo;
Amoy, China).

Strongylura strongylura Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1919,
p. 3 (Philippines). — Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 71, art. 10,
p. 4, 1927 (Benkoelan, Sumatra). —
Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1927, p. 261 (San Fernando;
Orani; Philippines); Mem. Bishop
Mus., vol. 10, p. 72, 1928 (compiled); —
Hong Kong Naturalist, vol. 3, nos. 3-4, p. 263, fig. 10, Dec. 1932 (Philippines).

Strongylura caudimaculata Van Hasselt,
Bull. Sci. Nat. Ferrussac, Zool., 1823,
p. 374 (type locality: Java). — Chu,
Biol.
Bull. St. John's Univ., no. 1, p. 86, Jan.

1931 (compiled).

Belone caudimacula Cuvier, Règne

Animal, ed. 2, vol. 2, p. 285, 1829

(on Kuddera A Russell, Fishes of Coromandel, vol. 2, p. 61, pl. 176, 1803, v). — Valenciennes, Hist. nat. ^{Vizagapatam} Bombay, Aliphey; Pondicherry; Calcutta;

Poiss., vol. 18, p. 452, 1846 (Rangoon).

— Richardson, Ichth. China Japan, p. 264, 1846 (China; Canton).

— Cantor, Journ. Asiatic Soc. Bengal, ^{Malayan Peninsula}

vol. 18, pt. 1, p. 1228, 1849 (1850) (Pinang).

— Bleeker, Verh. Batavia. Genoot.

(Madura), vol. 22, p. 5, 1849 (Bangcallang,

Kammal); Naturk. Tijds. Nederl. Indië,

vol. 1, p. 160 (Banka), p. 260 (Bandjermassing); ¹⁸⁵⁰

vol. 2, p. 190 (Bandjermassing), p. 470

(Rio), 1851; vol. 3, p. 54 (Singapore), p.

41

409 (Pamangkajene; Sampit; Bandjermassing); Verh. Batavia. Genoot.
(Snoek. Vissch.), vol. 24, p. 12. (Batavia,
Samarang, Surabaya, Pasuruan), p.
27 (Singapore, Pinang), 1852; (Bengal.
Hind.), vol. 25, pp. 8, 72, 1853 (compiled);
Natuurk. Tijds. Nederl. Indië, vol. 5,
p. 429, 1853 (Pontianak); vol. 8, p.
152, 1855 (Bandjermassing); vol. 11,
p. 419, 1856 (Muntok, Banka);
vol. 12, p. 217 (Nias), p. 26 (Tikoe),
1856; Act. Soc. Sci. Ind. Néerl., vol.
2, no. 7, p. 7, 1857 (Amboina); vol.

3, no. 6, p. 2, 1857-58 (Sinkawang,
Borneo); vol. 3, no. 9, p. 6 (Siboga),
p. 7 (Palembang) 1857-58; hat.

Tijds. Nederl. Indië, vol. 16, p. 26
(Tikoe), p. 434 (Sinkawang and
Pamangkot, Borneo), 1858; Act.

Soc. Sci. Ind. Nederl., vol. 5, no. 6,
¹⁸⁵⁸⁻⁵⁹ p. 4₁ (Palembang); vol. 5, no. 7, p. 2, ¹⁸⁵⁸⁻⁵⁹ 1
(Sinkawang); vol. 8 (Nicht. Sumat.),
¹⁸⁵⁹ p. 55₁ (Siboga; Palembang); Naturk.

Tijds. Nederl. Indië, vol. 21, p. 139,
1860 (Muntok, Banka); Versl. Akad.

Wet. Amsterdam, vol. 12, p. 64, 1861

(Pinang). — Macleay, Proc. Linn.
Soc. New South Wales, vol. 5, pt. 2,
p. 177, 1881 (Port Darwin).

Belone caudimaculata Cuvier, Règne
~~Animal, ed. 2, vol. 2, p. 285, 1829~~
~~(Pinang)~~. — Valenciennes, Hist.
Nat. Poiss., vol. 18, ~~p. 452~~, 1846 (table).
reference in

Richardson, Ichth. China Japan,
p. 264, 1846 (China; Canton). — Cantor,
Madras Journ. Liter. Sci., 1851, p. 147.

— Day, Fishes of Malabar, p. 164, 1865;
Proc. Zool. Soc. London, 1865, p. 369 (Cochin, Malabar).

— Günther, Cat. Fishes Brit. Mus.,
vol. 6, p. 245, 1866 (Amboina; Port

(Károli, Termesz. Füzetek, vol. 5, p. 181, 1881 (Singapore).
Essington) — Meyer, Anal. Soc.

Espan. Hist. nat. Madrid, vol. 14,
p. 38, 1885 (Manila Bay; Cebu). —

Weber, Zool. Erg. Reis. Nederl. Ost
Ind., vol. 3, p. 456, 1894 (Borneo).

— Elera, Cat. Fauna Filip., vol. 1,
p. 573, 1895 (Luzon; Manila; Rio
Pasig). — Volz, Zool. Jahrb. Syst.,
vol. 19, p. 393, 1903 (Sumatra); Nat.
Tijds. Nederl. Indië, vol. 66, p. 177,

1907 (Siboga; Palembang).

Belone candimaculata

Mastacembelus candimacula Bleeker,
Nederl. Tijds. Dierk., vol. 2, p. 176,
194, 1865 (Siam; copied).

45

Tylosurus caudimaculatus Jordan
and Richardson, Bull. Bur. Fisher,
vol. 27, p. 242, 1907 (1908) (Iloilo);
Mem. Carnegie Mus., vol. 4, p. 175, 1909
(Takao, Formosa). — Seale, Philippine
Journ. Sci., vol. 9, p. 60, 1914 (Hong
Kong). — Fowler, Copeia, no. 58, p. 62,
June 18, 1918 (Philippines). —
Borodin, Bull. Vanderbilt Marine
Mus., vol. 1, art. 2, p. 46, 1930 (Manila).

Belone saigonensis Sauvage, Bull. Soc.
Philom. Paris, ser. 7, vol. 3, p. 204, 1878
(type locality: Saigon, Cochin; Me'Kong in
fresh water).

46

Depth $15\frac{1}{3}$ to $16\frac{1}{5}$, body little compressed, caudal peduncle well compressed; head $2\frac{1}{3}$ to $2\frac{1}{2}$, width $8\frac{1}{5}$ to $8\frac{1}{2}$. Snout $1\frac{2}{5}$ to $1\frac{1}{2}$ in head from snout tip; eye $11\frac{1}{2}$ to 12 , $8\frac{1}{4}$ to $9\frac{1}{5}$ in snout, slightly greater to $1\frac{1}{8}$ in interorbital; maxillary reaches $\frac{1}{4}$ in eye, length from front point $2\frac{7}{8}$ to 3 in head posteriorly; canines slightly inclined backward; interorbital $11\frac{2}{5}$ to $12\frac{1}{2}$, level, with rather deep median groove).

Scales 124 to 143 in median lateral or axial series to caudal base; 85 to 103 predorsal forward to occiput; 14 or 15 postocular to hind preopercle ridge; 14 or 15

Jordan and Snyder, Bull. Bur. Fisher.,
vol. 26, 1906 (1907), p. 213 (specimen from
Fukaura, Japan).

Depth 3 to $3\frac{1}{4}$; head 3 to $3\frac{1}{8}$, width
2. Snout $3\frac{1}{3}$ to $3\frac{1}{2}$ in head from
snout tip; eye $3\frac{3}{4}$, $1\frac{1}{10}$ to $1\frac{1}{8}$ in snout,
 1 to $1\frac{1}{8}$ in interorbital; maxillary
reaches to or $\frac{1}{5}$ in eye, expansion $2\frac{2}{5}$ to
 $2\frac{2}{3}$ in eye, length $2\frac{2}{3}$ to $2\frac{7}{8}$ in head
from snout tip; teeth villiform, in
bands in jaws of 4 or 5 irregular
series besides an outer enlarged series;
vomer with broad diamond like patch
of villiform teeth, also broad patch on
each palatine; interorbital $3\frac{1}{3}$ to $3\frac{4}{5}$,
broadly and slightly convex; preopercle
edge minutely denticulate and denticles
little larger around corner; preopercle
edge with marginal parallel ridges or
flutings extending to serrae. Gill rakers

above lateral line to dorsal origin. Scales with 16 to 30 circuli, usually obsolete or absent apically.

D. II, 11 or II, 12, first branched ray $4\frac{3}{4}$ to 5 in total head; A. II, 14 to II, 12, first branched ray $4\frac{1}{8}$ to $4\frac{3}{5}$; least depth of caudal peduncle $1\frac{1}{6}$ to $1\frac{1}{4}$ in eye; caudal $3\frac{3}{4}$ to 4 in total head, truncate; pectoral $4\frac{1}{2}$ to $5\frac{1}{8}$; ventral $6\frac{3}{4}$ to $7\frac{2}{3}$, reaches $2\frac{1}{4}$ to $2\frac{2}{5}$ to vent.

Brown on back and upper surface of head, lower and under surfaces paler. Usually silvery lateral to axial band, most evident posteriorly and often defined above by dark gray line. Blue black round spot about

p. 151 (Boskin). — Fowler, Bull. Bishop Mus., no. 22, 1925, p. 26 (Honolulu). —

Fowler and Ball, Bull. Bishop Mus., no. 26, 1925, p. 14 (Johnston Island). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 193, pl. 16 B (Honolulu, Johnston Island, type of Bowersia ulaula [not Bowersia virescens]).

Ulaula sieboldi Jordan and Jordan, Mem. Carnegie Mus., no. 1, December 1922, p. 49 (Hawaii).

Chaetopterus dubius Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 345 (on Schlegel, Fauna Japonica, Poiss., dec. 5-6, 1844, p. 78, pl. 37, fig. 2, Japan).

Bowersia ulaula Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 183. Hilo, Hawaii; op. cit., vol. 23, pt. 1, 1903 (1905), p. 237, fig. 98 (type).

Apsilus microdon (not Steindachner)

size of pupil at caudal base
medially. Fins otherwise all
pale brownish. Iris silvery white.

India, Burma, Malaya,
East Indies, Siam, Philippines,
China, Formosa, North Australia,
Queensland.

Pristipomoides filamentosus Barnard,
Annals South African Mus., vol. 21, pt. 2,
October 1927, p. 648 (Natal).

Serranus mitis Bennett, Proc. Comm. Zool.
Soc. London, vol. 1, 1831, p. 127. Mauritius.

Chaetopterus sieboldii Bleeker, Verhandel.
Batav. Genootsch. (Nat. Ichth. Jap.), vol.
26, 1857, p. 20 (on Chaetopterus Sehlegel,

Fauna Japonica, Poiss., dec. 5-6, 1844, p.
78, pl. 37, fig. 2, Japan). — Regan,

Annals Mag. Nat. Hist. London, series 7,
vol. 16, 1905, p. 18 (Inland Sea of Japan).

Aprion sieboldii Jordan and Snyder,
Annot. Zool. Japan, vol. 3, pts 2-3, 1901,
p. 76 (copied).

Pristipomoides sieboldii Jordan and
Richardson, Proc. U. S. Nat. Mus., vol. 39,
1911, p. 462, fig. 6 (paratypes of Bowersia

ulaula). — Izuka and Matsuura,
Cat. Zool. Spec. Tokyo Imp. Mus., 1920,

Belone saigonensis Sauvage seems to be this species, with the following:

Head $2\frac{2}{3}$. Eye $3\frac{1}{2}$ in postorbital, equals interorbital; $\frac{2}{3}$ of maxillary below preorbital; jaws equal; teeth pointed, strong, none on palate or tongue; supraocular region striate.

Head above scaleless, with deep groove. Scales truncate, caducous.

D. 13, inserted before fourth anal ray, reaches behind anal; A. 15, rays higher than dorsal; free part of tail compressed, much deeper than wide; P. 11, little less than postorbital; V. 6, inserted midway between preopercle and caudal base.

Black spot at caudal base. Yellowish longitudinal band on flanks. Length 400 mm.

21250. Cotabato, below mouth^{50.}
of Mindanao River. May 20, 1908.
Length 142 mm.

One example. Iloilo market.
June 1, 1908. Length 93 mm. This
small example shows the black
caudal spot also the caudal
fin subterminally above blackish
and below or medially largely
dark brown.

6127. Iloilo market above river.
June 2, 1908. Length 278 to 288 mm.
Two examples.

17547. Sorsoyon market. March
12, 1909. Length 237 mm.

²⁰³⁹³
5011, Sandakan Bay, Borneo,
Dutch East Indies. March 2, 1908.
¹⁹³⁵
Length 290 mm.

Pristipomoides filamentosus (Valenciennes)

Serranus filamentosus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 508. St. Denis, Bourbon; Mauritius.

Anthias filamentosus Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 502 (Mauritius, type of Serranus mitis).

Centropristis filamentosus Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 703 (Red Sea).

Centropristis (Aprion) filamentosus Klunzinger, Fische Roth. Meer., 1884, p. 16.

Etelis filamentosus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 108, pl. 11, figs. 2-2a (east Madagascar).

Aprion filamentosus Gilchrist and Thompson, Annals South African Mus., vol. 6, pt. 3, 1909, p. 226 (Durban); Annals Durban Mus., vol. 1, pt. 4, 1917, p. 345 (references).

57
5307 to 5309. Sandakan Bay.
March 21, 1908. Length 225 to
235 mm.

5287. Sandakan Bay. March
31, 1908. Length 190 mm.

~~49489~~

(826
+
827)

Iris yellow. Fins rosy or clear
dorsal with median yellow
longitudinal band and base
between each spine and ray silvery
or yellowish. Lateral line golden
brownish. my description from a Hawaiian
example in the Academy.

5256. San Fernando, Union Province,
Luzon. March 17, 1908. Length 243.5 mm.

13290 A.N.S.P. Hawaiian Islands.
Dr. J. K. Townsend. Length 152 mm.

U. N. S. P., Nos. 49289 to 49292.
Philippines. Commercial Museum
of Philadelphia.

73-

Holacanthus diacanthus (non Boddart)

Bleeker, Act. Soc. Sci. Ind. Néerl.,
vol. 2, no. 7, 1857, p. (5) 57 (Amboyna).

Centropyge tutuila Jordan and
Jordan, Mem. Carnegie Mus., vol. 10,
no. 1, 1922, p. 62, plate 3, fig. 2. Tutuila,
Samoa.

Strongylura incisa (Valenciennes)
Belone incisa Valenciennes, Hist.

Nat. Poiss., vol. 18, p. 451, 1846 (type
 locality: Grand Ocean [Indo Pacific]).

— Günther, Cat. Fishes Brit. Mus.,
 vol. 6, p. 235, 1866 (copied). — Weber,
 Siboga Exped., vol. 57, Fische, p. 123,
 1913 (Biaru Island). — Duncker and
Mohr, Mitt. Zool. Mus. Hamburg,
 vol. 42, p. 126, 1926 (Kewieng Musa,
 New Mecklenburg).

Tylosurus incisus Weber and Beaufort,
 Fishes Indo Austral. Archip., vol. 4,

p. 125, 1922 (Batavia; Macassar,
Celebes; Biaru). — Herre, Philippine
~~not plate~~
Journ. Sci., vol. 36, no. 2, p. 223, ~~pl. 12~~
June 1928 (Polillo, Iba, Estancia,
Bantayan, Tandubas, Bato Bato;
Sitanki).

Strongylura incisus Fowler, Mem.
Bishop Mus., vol. 10, p. 73, 1928
(compiled); vol. 11, no. 5, p. 319, 1931
(compiled).

Belone leuroides Bleeker, Natuurk.
Tijds. Ned. Indië, vol. 1, p. (478) 479,
 1850 (type locality: Billiton); vol. 3,
 p. 54, 1852 (Singapore); Verh. Batavia
Genoots. (Snoek. Vissch.), vol. 24,
 p. 25, 1852 (Blitong, Billiton; Singapore);
Natuurk. Tijds. Ned. Indië, vol. 6, p. 90,
 1854 (Banda, Neira).

Belone leuroides Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 243, 1866 (type);
Rep. Voy. Challenger, vol. 1, pt. 6, p. 57,
 1880 (Hares Harbor, Admiralty Islands).
 — Schmeltz, Cat. Mus. Godeffroy, no. 8,

p. 7, 1881 (Ponapé); no. 9, p. 37, 1884
(Ponapé). — Günther, Journ. Mus.
Godeffroy, vol. 8, pt. 16, p. 352, 1909
(Admiralty, Pelau, Ponape, Ruk
Islands).

↑ Belone linroides Károli, Termesz. Füzetek,
vol. 5, p. 181, 1881 (Singapore). (Error.)

nat. Kl., vol. 60, pt. 1, p. 510, 1870
(Singapore).

Mastacembelus linroides Bleeker, Nederl.
Tijds. Dierk., vol. 1, p. 272, 1863 (Atapupu,
Timor); Atlas Ichth. Ind. Néerland.,
vol. 6, p. 50, pl. (9) 255, fig. 1, 1869-71

p. 7, 1881 (Ponapé); no. 9, p. 37, 1884
 (Ponapé). — Günther, Journ. Mus.
 Godeffroy, vol. 8, pt. 16, p. 352, 1909
 (Admiralty, Pelau, Ponape, Ruk
 Islands).

Belone (Mastacembelus) leuroides Steindach-
ner, Sitz. Ber. Akad. Wiss. Wien, math.
 nat. Kl., vol. 60, pt. 1, p. 570, 1870
 (Singapore).

Mastacembelus leuroides Bleeker, Nederl.
 Tijds. Dierk., vol. 1, p. 272, 1863 (Aitapupu,
 Timor); Atlas Ichth. Ind. Néerland.,
 vol. 6, p. 50, pl. (9) 255, fig. 1, 1869-71

(Java, Billiton, Singapore, Banda, Timor).

Tylosurus leiuroides Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 493, 1905 (Baram region of Sarawak). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 206, 1905 (1906) (Apia, Samoa). — Evermann and Seale, Bull. Bur. Fisher., vol. 26, p. 58, 1906 (1907) (Bacon). — Fowler, Copeia, no. 58, p. 62, June 18, 1918 (Philippines).

Strongylura leiuroides Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 5 (Philippines).

58

? Belone brachyrhynchos Bleeker,
Natuurk. Tijds. Nederl. Indië,
vol. 6, p. (51) 61, 1854 (type locality:
Singangole, Halmaheira).

Mastacembelus brachyrhynchus
Bleeker, Nederl. Tijdschr. Dierk.,
vol. 3, p. 232, ~~pl. () 255, fig. 2,~~
1866 (type); Atlas Ichth. Ind.
Néerland., vol. 6, p. 49, pl. (9) 255,
fig. 2, 1866-72 (type).

Belone strongylura (not Van Hasselt)

Bean and Weed, Proc. U. S. Nat. Mus.,
vol. 42, p. 592, 1912 (two from Batavia).

? Belone robusta Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 242, 1866 (type
locality: Red Sea; Egypt).

Belone robustus Klunzinger, Verh.
zool. bot. Ges. Wien, vol. 21, p. 579, 1871
(Red Sea).

Tylosurus robustus Regan, Ann. Mag.
Nat. Hist., ser. 8, vol. 7, p. 332, 1911
(name).

Belone strongylura (not Van Hasselt)
Bean and Weed, Proc. U. S. Nat. Mus.,
vol. 42, p. 592, 1912 (two from Batavia).

Tylosurus levis (not Bleeker)
Herre, Philippine Journ. Sci., vol.
36, no. 2, pl. 2, 1928.

60

Depth $17\frac{3}{4}$ to $18\frac{1}{5}$, compressed, tail little more so; head $2\frac{3}{4}$ to $2\frac{7}{8}$, width $7\frac{4}{5}$ to 8. Snout $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; eye $11\frac{1}{4}$ to $11\frac{4}{5}$, $7\frac{4}{5}$ to $8\frac{2}{5}$ in snout, $1\frac{1}{5}$ to $1\frac{1}{3}$ in interorbital, $2\frac{4}{5}$ to 3 in postorbital; maxillary reaches $\frac{1}{4}$ to $\frac{1}{3}$ in eye or to front pupil edge; maxillary point to eye $2\frac{1}{3}$ to $2\frac{1}{2}$ in rest of head; canines slightly inclined backward; interorbital $10\frac{1}{4}$ to $10\frac{1}{2}$ to snout tip, level, with broad median depression.

Scales 185 to 190 in lateral axial series to caudal base; 117 to 120 predorsal forward to occiput; 11 above to dorsal origin. Scales with 25 or 26 + 24 to 27 vertical circuli (striae) each side.

8403. [D. 5408.] Capitanillo Light,
N. 25° W., 20.8 miles (10° 40' 15" N., 124°
15' E.), between Cebu and Leyte. March

18, 1909. Length 261 mm.

2797. Philippines? Length 192 mm.

9394. Zamboanga market. September 7,

1909. Length 408 mm.

50669 U.S.N.M. Honolulu. Bureau of Fisheries. Type of Bowersia virescens.

51083 U.S.N.M. Hawaiian Islands.

Bureau of Fisheries. Length 255 mm.

As Platyurus microdon.

52686 U.S.N.M. Hawaiian Islands.

Bureau of Fisheries. Length 230 mm.

As Platyurus microdon.

52738 U.S.N.M. Hawaiian Islands.

Bureau of Fisheries. Length 475? mm.

As Bowersia virescens.

68231 U.S.N.M. Naha, Oahu, Rie

Kie. Albatross Collection. Length 260 mm.

Type of Platyurus amoenus.

74602 U.S.N.M. Naha, Oahu.

Albatross Collection. Length 253 and 254

61

D. II, 17 or II, 18; first branched ray $4\frac{1}{4}$ to 6 in head to snout tip; A. II, 23 or II, 24, first branched ray $3\frac{4}{5}$ to 4; least depth of caudal peduncle $1\frac{1}{3}$ to $1\frac{2}{5}$ in eye; caudal $3\frac{7}{8}$ to 4 in head to snout tip, truncate, corner rounded; pectoral $3\frac{4}{5}$ to $4\frac{1}{4}$; ventral $5\frac{4}{5}$ to $6\frac{1}{4}$, reaches $1\frac{7}{8}$ to 2 to vent.

Back brownish, with grayish (silvery) axial lateral streak. Under surface of body whitish. Iris gray white. Fins brownish, lower ones whitish and no dark caudal spot basally. Pectoral tips blackish.

Singapore, East Indies, Philippines, Polynesia, Melanesia, Micronesia. This species is characterized by its rather large scales and

811

form of the species." Though I cannot deny his contention altogether it seems unlikely this is true. That his figure is like that of Bowersia violascens is certain. Unfortunately he does not give the gill rakers, though his other details are in agreement.

P 2 797:
Length 192 mm.

62

deep occipital depression, also its long falcate dorsal and anal lobes similar to those of Strongylura crocodila. From that species it differs in its more advanced ventrals, which extend two times to vent and its caudal only shallowly concave behind. From Strongylura leiura it differs chiefly in the larger head, largely due to the very attenuated and slender beak. The head is thus contained about $2\frac{1}{4}$ to $2\frac{3}{5}$ times to caudal base, while in S. leiura the head is nearly 3 to $3\frac{1}{5}$.

Following Barnard's suggestion it seems to me that Belone robusta is most closely related to if not identical with the present species. Gunther's types were 745 to 770 mm. long with forked caudal fins.

or less silvered tints. Scattered, small, irregular, dark spots on scales of back. Fins all dull brown. Iris light reddish brown.

Queensland, New South Wales, Hawaii.

In my "Fishes of Oceania" I have wrongly included seven examples in the Bishop Museum described under Pristipomoides sieboldii, ~~as the present species~~ but then together with the type of Bowersia violacea, belong with the present species. As McCulloch in his remarks under Aprion roseus says his specimens differ from ~~Pristipomoides~~ Aprion microlepis Steindachner in the smaller eye and broader preorbital and that "these characters - doubtless alter with age, and as my specimens are much larger than those described by Bleeker, they perhaps represent merely the adult

5784. Baganga Bay, Mindanao.
May 13, 1908. Length 297 mm.

5642, 5644, 5645. Busin Harbor, Burias
Island. April 23, 1908. Length 367 to 466 mm.

One example. Canmahala Bay, Ragay Gulf,
Luzon. March 11, 1909. Length 353 mm. Head $2\frac{3}{5}$.

5362. Cebu market. April 5, 1908.
Length 405 mm.

5745.

5739, 5742, La Generale Island,
Capunypugan Point, Mindanao. May 9,
1908. Length 416 to 465 mm.

5581. San Miguel Harbor, Ticao Island.
April 21, 1908. Length 528 mm.

U. S. N. M. no. 52364. Apia, Samoa. Bureau
of Fisheries (04763). Length 598 to 758 mm.
Two examples.

U. S. N. M. no. 56036.

Bureau of Fisheries (3519). Length 278 mm.

U. S. N. M. No. 72573. Batavia, Java.
Bryant and Palmer. Length 228 to 241
mm. Two examples. As Belone
strongylura.

A. N. S. P., No. 49288. Philippines.
Commercial Museum of Philadelphia.

65

Strongylura leiura (Bleeker)
Belone leiurus Bleeker, Natuurk.
Tijds. Nederl. Indië, vol. 1, p. 94,
1850 (1851) (type locality: Batavia,
Java); Verh. Batavia. Genoot. (Snoek.
Viss.), vol. 24, p. 13, 1852 (Batavia);
Natuurk. Tijds. Nederl. Indië, vol. 6,
p. 518, 1854 (Delakan, west Sumatra);
vol. 7, p. 314, 1854 (Bantem); vol. 8, p. 393,
1855 (Amboina); vol. 10, p. 348, 1856
(Rio, Bintang); vol. 13, p. 385 (Batjan),
p. 480 (Prigi, Java), 1857; Act. Soc. Sci.
Ind. Néerl., vol. 3, no. 9, p. 3, 1857-58

46

(Padang); Naturk. Tijds. Nederl.
Indië, vol. 17, p. 143, 1858-59
(Boleling, Bali); Act. Soc. Sci.
Ind. Nederl., vol. 8 (Sumatra), p.
12, 1859 (Benculen). — Kner, Reise
Novara, Fische, p. 321, 1865 (Nicobars,
Ceylon, Madras). — Day, Fishes of
India, pt. 3, p. 511, 1877. — Károli, Termesz.
Füzetek, vol. 5, p. 182, 1881 (Singapore).
Belone liurus Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 250, 1866 (type).
Belone liura Day, Fauna British India,
Fishes, vol. 1, p. 420, 1889.

Belone leivrus Volz, Natuurk. Tijds.
Nederl. Indië, vol. 66, p. 177, 1907

(Priaman, Blakan, Padang, Benkulen).

Mastacembelus leivrus Bleeker, Versl.

Akad. Wet. Amsterdam, ser. 2, vol. 2,

p. 294, 1868 (Rio, Bintang); ser. 2,

vol. 7, p. 36¹⁸⁷³ (Aru Islands); Atlas

Ichth. Ind. Néerl., vol. 6, p. 46, pl.

(11) 257, fig. 2, 1869-72 (Java, Bali,

Sumatra, Bintang, Batjan, Amboina).

Gylosurus leivrus Jordan and Evermann,

Proc. U.S. Nat. Mus., vol. 25, p. 329,

1903 (Formosa). — Fowler, Journ.

Acad. Nat. Sci. Philadelphia, ser.
2, vol. 12, p. 501, 1904 (Padang).

— Jordan and Seale, Bull. Bur.

Fisher., vol. 26, p. 8, 1906 (1907)

(Cavite). — Seale and Bean, Proc. U.

S. Nat. Mus., vol. 33, p. 240, 1907

(Zamboanga). — Jordan and Richardson,

Bull. Bur. Fisher., vol. 27, p. 243,

1907 (1908) (Aparri); Mem. Carnegie

Mus., vol. 4, p. 175, 1909 (compiled). —

Weber and Beaufort, Fishes Indo

Austral. Archip., vol. 4, p. 124 (Pulu

Weh; Nias; Batavia, Krawang and

Semarang, Java; Flores; Ambon).
— Herre, Philippine Journ. Sci.,
vol. 36, no. 2, p. 225, ^(not pl. 2) June 1928
(Santa Maria, Manila; Hoihow,
Hainan).

Strongylura leiura Fowler, Proc. Acad.
Nat. Sci. Philadelphia, 1919, p. 5
(Padang); 1927, p. 261 (Philippines);
Mem. Bishop Mus., vol. 10, p. 72, 1928
(Guam; Elbon).

? Belone tenuirostris Blyth, Journ.
Asiatic Soc. Bengal, vol. 29, p. 287,
1859 (1860) (type locality: Sitang River).

Mastacembelus anastomella (not⁷⁰
Valenciennes) Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 24, 1866.

Tylosurus annulatus (not Valenciennes)

Seale, Occas. Pap. Bishop Mus., vol.
1, no. 3, p. 64, 1900 (1901) (Guam).

Strongylura leisuroides (not Bleeker)

Fowler, Copeia, no. 58, p. 62, June 18,
1918 (part).

20
10
10

71

Depth $16\frac{3}{4}$ to $18\frac{2}{3}$, compressed, caudal peduncle usually deeper than wide; head 3 to $3\frac{1}{4}$, width 9 to $9\frac{1}{2}$. Snout $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; eye $11\frac{1}{2}$ to 12, $7\frac{1}{3}$ to $8\frac{1}{5}$ in snout, $1\frac{1}{8}$ to $1\frac{1}{5}$ in interorbital; maxillary reaches $\frac{1}{4}$ in eye, length to maxillary point $2\frac{2}{5}$ to $3\frac{2}{3}$ rest of head; canines slightly inclined posteriorly; interorbital 10 to $10\frac{1}{4}$ in head to snout tip, level, with broad deep median depression.

Scales 180 to 190 in lateral axial series to caudal base; 170 to 176 predorsal forward to occiput; 14 above lateral line to dorsal origin; 12 to 14 rows on postocular to vertical preopercle ridge. Scales 24 to 28 circuli, obsolete

gives 75. Schlegel thought the color uniform red in a fresh state and gives its length 381 mm. Regan notes an example 230 mm. From the Inland Sea of Japan with a narrow preorbital, 20 lower gill rakers and scales 72, with 8 above and 19 below. With these items as criteria I find nothing except the increased number of scales as distinctive character for Serranus filamentous Valenciennes, especially as figured by Sauvage. It is therefore extremely likely the nominal species with narrow preorbital, numerous gill rakers and rather small scales are really one and the same.

apically.

D. II, 17 or II, 18, first branched ray $5\frac{1}{3}$ to $5\frac{1}{2}$ in head to snout tip; A. II, 21 or II, 22, first branched ray $3\frac{3}{5}$ to $3\frac{7}{8}$; least depth of caudal peduncle $1\frac{1}{8}$ to $1\frac{1}{4}$ in eye; caudal $2\frac{4}{5}$ to $3\frac{1}{2}$ in head to snout tip, hind edge little concave convex; pectoral $3\frac{2}{5}$ to 4; ventral 5 to $5\frac{1}{3}$, reach 2 to $2\frac{1}{5}$ to vent.

Brown, paler to silvery white below. Well defined silvery lateral band wide as pupil. Iris silvery white. Vertical fins brownish, dorsal and caudal grayish terminally. Other fins whitish. Pectoral dusky to blackish terminally.

Iris light brownish. Dorsals and caudal very pale brownish, other fins whitish.

Red Sea, Natal, Bourbon, Mauritius, Madagascar, Japan, Hawaii. A species known by its narrow preorbital, the space from the angle of the maxillary to the lower eye edge being contained in the eye about $2\frac{1}{2}$ times in my examples. It is well figured by Sauvage as Etelis filamentosus and Jordan and Evermann as Bowersia ulana. The atypic Chaetopterus of Schlegel is figured with a very narrow preorbital and the last dorsal and anal ray elongated. Though the figure shows but 9 scales above the lateral line and 11 below, it has about $8\frac{1}{2} + 8$ in its entire course, quite contrary to the statement in the description which

India, Ceylon, Nicobars, Malaya,
East Indies, Philippines, Hawaiian,
Formosa, Micronesia.

4527. Manila market. December⁷⁴
18, 1907. Length 313 mm.

D. 5597. Zamboanga Light N. 31° W.,
0.1 mile (lat. $6^{\circ}54'$ N., long. $122^{\circ}4'30''$
E.). September 30, 1909. Length 343 mm.

19925. Sandakan Anchorage, Borneo,
Dutch East Indies. Electric light.
March 1-8, 1909. Length 331 mm.

E. S. N. M. No. 86533. Pondicherry.
E. Deschamp. Length 347 to 367 mm.
Two examples.

A. N. S. P., No. 27455. Padang, Sumatra.
A. C. Harrison and H. L. Miller. Length 305
mm. (beak broken). In arrack with
back and head above dark greenish olive
(later faded dull brown). Sides and below,
also iris, silvery white. Fins pale. Dorsal
and caudal dusted with pale dusky.
Dark brown streaks from occiput to near
dorsal and on each side of body from shoulder
leaden band to caudal base medially.

~~Registred by~~
~~the Government of~~
~~the Straits Settlements~~
~~and F. M. S.~~

27,602 and 27,603 A. N. S. P. Padang,
Sumatra. A. C. Harrison and H. D.
Hiller. Length 240 to 245 mm.
When fresh in above rosy red,
becoming silvery below. Lower parts
and side of head silvery. Spinous
dorsal tinged with pale greenish
yellow and other fins all more or
less pale. Base of caudal dull
orange.

Strongylura tahitiensis Fowler and Bean

Strongylura tahitiensis Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 63, p. 10, 1923
(type locality: Tahiti); Mem. Bishop
Mus., vol. 10, p. 73, 1928 (compiled);
vol. 11, no. 5, p. 319, 1931 (compiled).

? Belone depressa (not Poey) Boulenger,
Ann. Mag. Nat. Hist., ser. 6, vol. 20,
p. 374, 1897 (Rotuma).

{ Schmeltz, Cat. Mus. Godeffroy, no. 7, p.
57, 1879 (Yap). — Pöhl, Cat. Mus.
Godeffroy, no. 9, p. 37, 1884 (Yap). —

? Tylosurus platurus (not Bennett)
Waite, Rec. Austral. Mus., vol. 5,
p. 3, 1903 (Paanopa, Ocean Island,
Gilbert Group).

2nd ✓ Depth 17, body partly cylindrical, caudal peduncle deeper than wide; head $3\frac{1}{4}$, width $7\frac{1}{5}$. Snout $1\frac{3}{5}$ in rest of head; eye $11\frac{1}{5}$ in head from snout tip, $7\frac{1}{5}$ in snout, $1\frac{1}{8}$ in interorbital; maxillary reaches $\frac{1}{4}$ in eye, length to anterior point $2\frac{7}{8}$ in rest of head posteriorly; canines slightly inclined posteriorly; interorbital $9\frac{1}{2}$ in head from snout tip, level, with long wide depression.

Scales 300 in median or lateral axial series to caudal base; 206

predorsal forward to occiput; 15
above lateral line to dorsal origin;
19 on postocular to hind preopercle
edge. Scales with 38 to 42 parallel
vertical striae, more or less complete.

D. II, 14, I, first branched ray
 $4\frac{4}{5}$ in total head length; A. II,
17, I, first branched ray $5\frac{1}{8}$;
least depth of caudal peduncle
 $1\frac{2}{5}$ in eye; caudal 4 in total
head length, hind edge concave?;
pectoral $4\frac{1}{5}$; ventral $6\frac{3}{5}$, reaches
 $2\frac{7}{8}$ to vent.

Back and top of head brown,
sides and lower surfaces pale to
whitish, evidently silvery white
when fresh. Obscure silvery streak,
not wider than pupil, from
shoulder till below dorsal, where
expanded $\frac{2}{3}$ vertical eye diameter

No. 112, November 20, 1922, p. 83 (Hawaii).

Pristipomoides microlepis Fowler, Mem.

Bishop Mus., vol. 10, 1928, p. 192 (Hawaiian Islands).

Aprion brevirostris (Cuvier and Valenciennes)

Güichenot, Notes Ile Réunion, vol. 2, 1862,

p. 24 (name only). ~~Reunion.~~ — Sauvage,

Hist. Nat. Madagascar, Poiss., 1891, p. 109

(name in synonymy).

Etelis brevirostris Vaillant, Bull. Soc.

Philomath. Paris, series 6, vol. 10, 1873, p.

15. Bourbon. — Sauvage, Hist. Nat.

Madagascar, Poiss., 1891, p. 109, pl. 10, fig.

2, a - b (type).

Arnillo auricilla Jordan, Evermann, Tanaka,

Proc. Cal. Acad. Sci., series 4, vol. 16, 1927,

p. 668, pl. 23, fig. 3. Honolulu.

in width. Fins all brownish.

Micronesia (Yap and Paanofa) and Polynesia (Ellice and Society Islands). Near Strongylura incisa, though with some very diverse distinctions as the fewer (14) branched dorsal rays, increased lateral scales (300) in lateral series. In the character of the wide depression on the top of the head, with the somewhat convex areas on each side, it agrees largely with S. incisa.

U. S. N. M. no. 83424, Type. Tahiti. Wilkes Exploring Expedition. Length 640 mm. (beak and caudal tips damaged). In the original description head erroneously given as $5\frac{1}{3}$. ✓

Pristipomoides microlepis (Bleeker)

Chaetopterus microlepis Bleeker, Verslagen Kon. Akad. Wet. Amsterdam, series 2, vol. 3, 4869, p. 80. (Amboina); Bourbon Island; Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, pl. 17, fig. 2.

Ciprion (Ciprion) microlepis Bleeker, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 26 (Amboina; Bourbon); Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, p. 78 (Amboina).

Ciprion microlepis Bleeker, Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, pl. (58) 336, fig. 5. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 502 (Hawaii). — Weber, Siboga Exped., vol. 57, Fische, p. 257 (Sulu, Sulu Archipelago; Banda). — Ogilby, Mem. Queensland Mus., vol. 5, 1916, p. 182 (Moreton Bay). — Fowler, Copeia,

Strongylura krefftii (Günther)

Belone krefftii Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 250, 1866 (type locality: Australia). — Macleay,

Proc. Linn. Soc. New South Wales, vol.

5, pt. 2, p. 178, 1881 (rivers of north

Queensland). — Regan, Trans. Zool.

Soc. London, vol. 20, pt. 6, p. 276, 1914

(Mimika River, New Guinea).

Saville Kent, Great Barrier Reef, pp. 299, 1893 (Fitzroy near Rockhampton).

Belone krefftii Weber, Nova Guinea,

vol. 9, pt. 4, p. 553, 1913 (Lorentz River).

Tylosurus krefftii McCulloch, Mem.

Austral. Mus., vol. 5, pt. 2, p. 29,

1919 (reference).

Tylosurus krefftii Weber and Beaufort,
Fishes Indo Austral. Archip., vol.
4, p. 123, 1922 (Lorentz River).

? Belone cancila (not Buchanan-
Hamilton) Macleay, Proc. Linn. Soc.
New South Wales, vol. 7, p. 592, 1882
(New Guinea).

Xenentodon cancila Weber and
Beaufort, Fishes Indo Austral.
Archip., vol. 4, p. 134, 1922 (note on
Macleay's record).

81

Depth not much less than pectoral length, body strongly compressed; free portion of tail strongly compressed, much deeper than broad; head $2\frac{2}{5}$. Eye equals interorbital, 3 in postorbital; base of premaxillaries much depressed; maxillaries $\frac{2}{3}$ hidden by preorbital; teeth rather feeble, wide set and tongue smooth; superciliary region slightly striated.

Scales thin, small. Scaly groove of moderate width runs along middle of upper surface of head. ✓

31

D. 17, origin opposite anal origin, middle and hinder rays subequal, short, last ending well before caudal base; A. 19, like dorsal only front rays longer; caudal slightly emarginate; P. 13, somewhat less than distance of opercular margin from orbit; ventral midway between preopercle and caudal.

Upper parts blackish, sides
and belly silvery white, two colors
separated by narrow greenish streaks.
Length 355 mm. (Günther.)

Queensland, New Guinea.

83

Strongylura groeneri (Klunzinger)

Belone groeneri Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, math.-nat. Kl., vol. 80, pt. 1, p. 414, 1879 (type locality: Port Darwin).

Tylosurus groeneri McCulloch, Austral. Mus. Mem., No. 5, pt. 1, p. 100, June 29, 1929 (reference).

Depth $1\frac{1}{4}$ in pectoral fin; head $3\frac{1}{6}$. Eye $9\frac{1}{2}$ in head, $2\frac{1}{3}$ in postorbital; tongue rough; interorbital $\frac{1}{2}$ in postocular; head with shallow but distinct groove.

D. 19 or 20; A. 20. Length 600 mm.

(Klunzinger.)
North Australia. ^{Klunzinger also gives the following comparisons.} Like Belone robusta Günther with weak keel to tail, broad as deep, lower dorsal and anal posterior rays, only under edge of upper jaw visible, small adherent scales, forked caudal ^{and} similarly placed ventral. Belone choram has hind

dorsal and anal rays somewhat longer, also with different ray lengths. Belone liuroides has larger scales, longer head, color as usual, dorsal and pectoral somewhat dark. Belone gavioides is little known though without lateral caudal keel.

85

Strongylura macleayana (Ogilby)

Belone macleayana Ogilby, Cat. Fishes
New South Wales, p. 53, 1886 (on
Macleay); Edible Fishes of New
South Wales, p. 170, pl. 41, 1893.

Tylosurus macleayana Stead, Fishes
of Australia, p. 64, 1906 (New South Wales).
— Roughley, Fishes of Australia, p. 35,
1916 (New South Wales).

Tylosurus macleayanus McCulloch,
Austral. Mus. Mem., No. 5, pt. 1, p. 100,
June 29, 1929 (compiled).

Belone gracilis (not Lowe 1839, Schlegel 1846)
Macleay, Proc. Linn. Soc. New South
Wales, Vol. 6, pt. 2, p. 243, Sep. 12, 1881
(type locality: Port Jackson).

Tylosurus impotens Ogilby, Proc. Roy. Soc.
Queensland, vol. 21, p. 89, 1908 (type
locality: Moreton Bay, Queensland).

86

Depth $16\frac{3}{4}$; head $3\frac{2}{5}$. Snout $1\frac{3}{5}$ in head from snout tip; eye $1\frac{1}{3}$, $7\frac{1}{2}$ in snout; maxillary reaches $\frac{2}{3}$ of eye; jaws with outer band of fine teeth and inner series of moderately stout conic ones; shallow median groove from occiput to upper jaw; occiput moderately striated, striae diverging from pair of lateral centers; posterior half of occiput deeply grooved laterally.

Scales small, thin, deciduous; cheeks and front half of cephalic groove scaly.

D. 20 or 21, first branched ray $4\frac{1}{5}$ in total head length; A. 19 to 21, first branched ray $3\frac{1}{3}$; caudal $3\frac{7}{8}$, ~~in the~~ rounded behind; caudal peduncle deep as wide, least depth little less than eye, keel obsolete

855

horizontal venules. Gill rakers $10 + 16$, lanceolate, $1 \frac{1}{4}$ in eye; gill rakers $\frac{2}{3}$ of gill filaments.

Scales 68 to 70 in lateral line to caudal base and 5 or 6 more on latter; 10 scales above lateral line, 18 below, 23 to 26 predorsal, 8 rows on cheek. Suprascapula entire, venulose. Preorbital with oblique parallel striae. Scales with 12 or 13 basal radiating striae; circuli minute.

D. X, 10, I, third spine $2 \frac{1}{5}$ to $2 \frac{1}{2}$ in total head length, last ray 2 to $2 \frac{1}{8}$; A. III, 8, I, third spine $3 \frac{1}{3}$ to $3 \frac{3}{5}$, last ray 2 to $2 \frac{1}{5}$; least depth of caudal peduncle $3 \frac{1}{5}$ to $3 \frac{1}{4}$; pectoral $1 \frac{1}{8}$ to $1 \frac{1}{3}$; ventral $1 \frac{2}{3}$ to $1 \frac{3}{4}$; caudal $2 \frac{4}{5}$ to 3 in combined head and body.

Olive green on back, little paler

87

or absent; pectoral $3\frac{1}{5}$, greater than postorbital; ventral $5\frac{1}{8}$ in total head, reaches $2\frac{2}{5}$ to anal.

Dark green above, silvery below. Snout blackish. Dorsal and caudal yellowish green, more or less distinctly tipped with black. Elongate anal rays and ventrals pale yellow, latter more or less clouded. (Ogilby.)

New South Wales, Queensland.

Though figured with rounded caudal the description says emarginate with the lower lobe produced.

Tylosurus impotens Ogilby is evidently the same species and is said to reach 800 mm.

on lower surface. Iris brownish.
Fins brown like body.

Mauritius, Reunion, Ceylon, East
Indies, Japan, Polynesia, Hawaii.
Among Indo-Pacific snappers the
uniform dark coloration of this species
is exceptional. I have no examples,
except Hawaiian, with the variable
white frontal area for which the
nominal Aphareus fulviventris was
proposed by Jenkins and more
recently as the genotype of Sacrestinus.
The species attains over 700 mm. though
the average is usually much less.
Alcoholic examples often show
brilliant blue, violet or green
reflections on the back.

88

Strongylura terebra (Whitley)

Tylosurus terebra Whitley, Records
Austral. Mus., vol. 16, pt. 1, p. 8, pl.
1, fig. 6, Oct. 7, 1927 (type locality:
Michaelmas Cay, North Queensland).

Depth $22 \frac{2}{5}$; head $2 \frac{1}{2}$. Snout $1 \frac{2}{5}$
in head from snout tip; eye $12 \frac{1}{5}$, 9
in snout, equals interorbital, 2 in
postorbital; maxillary concealed below
preorbital; teeth with many subvertical
canines, little inclined back in lower
jaw; top of head with series of bony
radiating ridges converging into
vertex behind each eye and radiating

ridges over opercle. No gill rakers.

Scales cycloid. Interorbital scaly where sunken between ridges. Lateral line low, ends just behind anal fin, branch ascending to each pectoral base. $\sqrt[3]{4}$

D. II, 19, first branched ray $6\frac{7}{8}$ in total head; A. II, 22, first branched ray $4\frac{7}{8}$; caudal peduncle depressed, keel each side, deeper than broad anteriorly, least depth $\frac{2}{5}$ of eye; caudal emarginate, lower lobe little longer, length $5\frac{3}{4}$ in total head; pectoral $4\frac{1}{8}$, rays I, 11; ventral $7\frac{3}{4}$ in total head, reaches 3 to anal origin.

In life sea green, with intense silvery iridescence, especially below. On back 3 gray longitudinal lines,

A 1438. Kait Point, Libani Bay, Celebes.
December 29, 1909. Length 348 mm.

A 1146. Kayoa Island. November 29,
1909. Length 334 mm.

A 824, A 825. Talisse Island, north of
Celebes. November 9, 1909. Length 325 to
328 mm.

A 1334. Tomahu Island, Bouro.
December 12, 1909. Length 330 mm.

A 1291, A 1292. Uki, Bouro. December
9, 1909. Length 305 to 330 mm.

192410. S. N. M. Fanning Islands.

Mr. J. H. Streets. Length 322 mm.

496410. S. N. M. Honolulu. Dr. G. P. Jenkins. Type of Aphareus

52701 U. S. N. M. Hawaiian Islands.

Bureau of Fisheries. Length 300? mm.

As Aphareus flavivultus.

55090 U. S. N. M. Honolulu. Albatross

Collection. Length 225 to 270 mm. 2 examples.

As Aphareus flavivultus.

2 examples.

(55020 U. S. N. M. Honolulu. Albatross Collection.

62357 U. S. N. M. Honolulu. D. S. Jordan.

Length 272 mm. As Aphareus flavivultus.

90

middle one thickest. Purplish
iridescence below preorbital and
in green on top of head when fish
turned in light. Fins greenish.
Caudal with indefinite dusky area
on terminal half of upper lobe.
Bluish line along sides, bright
silver in certain lights. Pectoral
axil dark green. Length 243 mm.
(Whitley.)

Queensland.

Aphareus rutilans Cuvier

Aphareus rutilans Cuvier, Hist. Nat. Poiss.,
vol. 6, 1830, p. 490. Red Sea. — Rüppell,
Neue Wirbelth. Fische, 1835, p. 121 (Ojeida).
— Günther, Cat. Fishes Brit. Mus., vol. 1,
1859, p. 386 (compiled). — Guichenot, Notes
Ile Réunion, vol. 2, 1862, p. 25. —
Klunzinger, Verh. zool. bot. Gesell. Wien,
vol. 20, 1870, p. 768 (Red Sea). — Bleeker,
Atlas Ichth. Ind. Néerl., vol. 7, 1873-76,
pl. (21) 299, fig. 2. — Klunzinger, Fische
Roth. Meer., 1884, p. 45. — Meyer, Anales
Soc. Españ. Hist. Nat. Madrid, vol. 14,
1885, p. 19 (Rubi, New Guinea). —
Boulenger, Proc. Zool. Soc. London, 1887, p.
657 (Muscat). — Day, Fishes of India,
Suppl., 1888, p. 782 (Ceylon). — Boulenger,
Proc. Zool. Soc. London, 1889, p. 245 (Muscat).
— Fowler, Mem. Bishop Mus., vol. 10, 1928, p.
195, fig. 45 (type of Aphareus thompsoni).

91

Strongylura ferox (Günther)

Belone ferox Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 242, 1866 (type
locality: New South Wales). —

Castelnau, Proc. Linn. Soc. New South Wales,
vol. 2, p. 239, 1877 (Queensland); vol. 3,
p. (355) 394, 1878 (Port Jackson). —

Macleay, Proc. Linn. Soc. New South Wales,
vol. 5, pt. 2, p. 176, 1881 (Port Jackson).

— Ogilby, Edible Fish. New South Wales, p.
168, 1893.

— Woods, Fisher. New South Wales, p. 83,
pl. 36.

Tylosurus ferox Stead, Fishes of Australia,
p. 64, fig. 24, 1906 (New South Wales; Western
Australia). — Roughley, Fishes of Australia,

p. 33, pl. 6, 1916 (New South Wales, Queensland,
Western Australia). — McCulloch, Austral. Mus.
Mem., no. 5, pt. 1, p. 101, June 29, 1929 (North Australia,
New South Wales, Queensland, Western Australia, Victoria).

92

Body compressed, depth less than pectoral length; head less than 3. Eye $\frac{2}{3}$ of interorbital, $\frac{2}{7}$ of postorbital; bases of premaxillaries depressed; only basal half of maxillaries hidden by preorbital; jaws and teeth strong, none on palate or tongue; head above with broad median groove, tapering behind and widening in front; superciliary region striated.

Scales thin, rather small, adherent. D. 21, middle and hind rays short, subequal, last ending well before caudal root; A. 26, like dorsal; caudal truncate; free portion of tail not compressed, subtriangular, with back of tail broad and depressed; pectoral longer than opercular edge from orbit; ventral nearly midway between front eye edge and caudal

Aphareus (Fares) utilans Jordan,
Evermann, Yanaka, Proc. Cal. Acad.

Sci., series 4, vol. 16, no. 20, November 14,
1927, p. 673, pl. 24, fig. 1 (Honolulu).

Aphareus fucatus (not Lacépède) Bleeker,
Atlas Ichth. Ind. Néerl., vol. 8, 1876-77,
p. 80 (part). — Jordan and Thompson,
Proc. U. S. Nat. Mus., vol. 39, January 30,
1911, p. 467 (part).

Aphareus thompsoni Fowler, Occas. Pap.
Bishop Mus., vol. 8, no. 7, 1923, p. 382.
Honolulu.

Depth $3\frac{3}{5}$ to $3\frac{2}{3}$; head $3\frac{1}{8}$ to $3\frac{1}{5}$,
width $2\frac{1}{4}$ to $2\frac{2}{5}$. Snout $2\frac{7}{8}$ to 3 in head
from snout tip; eye $4\frac{1}{2}$ to $1\frac{2}{5}$
to $1\frac{3}{4}$ in snout, $1\frac{2}{3}$ in interorbital;
maxillary reaches $\frac{3}{5}$ to $\frac{2}{3}$ in eye,
expansion $1\frac{3}{4}$ to 2 in eye, length $1\frac{7}{8}$
to 2 in head from snout tip; teeth
minute, sharp pointed, form narrow

base. Length 775 mm. (Günther.) ⁷³

Western Australia, North
Australia, Queensland, New South
Wales and Victoria.

uniform band in each jaw, though obsolete or absent in mandible posteriorly; interorbital $3\frac{1}{8}$ to $3\frac{2}{5}$, broadly convex; preopercle edge entire, flange with fine parallel venules. Gill rakers $19 + 32$, lanceolate, inner edges finely spinose, length $1\frac{1}{5}$ in eye; gill filaments $\frac{3}{5}$ of gill rakers.

Scales 70 to 73 in lateral line to caudal base and 3 to 5 more on latter; 8 to 10 scales above lateral line, 17 or 18 below, 22 or 23 predorsal, ^{or 9} 8 rows on cheeks.

Suprascapula entire, striate.

Scales with 10 or 11 basal radiating striae; about 108 weak apical denticles, very small, with 14 or 15 transverse series of basal elements; circuli very fine.

Strongylura timucoides (Van Hasselt).

Belone timucoides Van Hasselt, Algemein.
Kunst- en Letterbode, no. 35, 1823.

(on Wahlah Kuddera Russel, Fishes of
Coromandel, vol. 2, p. 60, pl. 175, 1803,
type locality: Vizagapatam); Bull. Sci.
Nat. Geol. Ferrussac, vol. 2, p. 374, 1824
(reference).

95

Esoc belone (not Linnaeus) Forskål,
Descript. Animal., pp. ^{III} 67, 1775 (Red Sea).

Belone coromandelica Kuhl and Van
Hasselt, Algem. Konst- en Letterbode,
vol. 1, p. 1300, 1823 (type locality:
Coromandel) (name only).

Tylosurus coromandelica Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 26,
p. 530, 1903 (Isumuga; Yokohama).
— Jordan and Richardson, Mem.
Carnegie Mus., vol. 4, p. 175, 1909
(Takao, Formosa).

Strongylura coromandelica Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
p. 5, 1919 (Padang).

96

Belone choram Rüppell, Neue Wirbelth.;
Fische, p. 72, 1835 (type locality:
Red Sea). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 239, 1859
(Zanzibar; Mozambique), p. 357
(Canderoon), 1866. — Klunzinger,

Verh. zool. bot. Gesell. Wien, vol. 21,
p. 578, 1871 (Red Sea). — Schmeltz,

Cat. Mus. Godeffroy, no. 5, p. 35, 1874
(Vamoa). — Peters, Monatsber.
Akad. Wiss. Berlin, 1876, p. 848
(Amboina; Bougainville Island).

— Kossman, Zool. Anzeiger, vol. 2, p. 21, 1879
(Red Sea).

— Woulenger,
Proc. Zool. Soc. London, 1887, p. 666
(Muscat). — Day, Fauna British
India, Fishes, vol. 1, p. 419, 1889.

— Vauvage, Hist. nat. Madagascar,
Pois., p. 526, 1891 (name). —
Tillier, Mém. Soc. Zool. France,

96

Belone choram Rüppell, Neue Wirbelth;
Fische, p. 72, 1835 (type locality:
Red Sea). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 239
(Zanzibar; Mozambique), p. 357
(Cameroon), 1866. — Klunzinger,

Verh. zool. bot. Gesell. Wien, vol. 21,
p. 578, 1871 (Red Sea). — Schmeltz,

Cat. Mus. Godeffroy, no. 5, p. 35, 1874
(Samoa). — Getters, Monatsber.
Akad. Wiss. Berlin, 1876, p. 848
(Amboina; Bougainville Island).

— Day, Fishes of India, pt. 3, p. 510,
pl. 118, fig. 4, 1877. — Boulenger,
Proc. Zool. Soc. London, 1887, p. 666
(Muscat). — Day, Fauna British
India, Fishes, vol. 1, p. 419, 1889.

— Sauvage, Hist. nat. Madagascar,
Pois., p. 526, 1891 (name). —
Tillier, Mém. Soc. Zool. France,

vol. 15, p. 292, 1902 (Suez Canal at Red Sea). — Duncker, Mitteil. Natur. Mus. Hamburg, vol. 21, p. 169, 1903 (1904) (Singapore). — Günther,

Journ. Mus. Godeffroy, vol. 8, pt. 16, p. 351, 1909 (Duke of York Island).

³⁷
Mastacembelus chorum Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, pl. (10) 256, fig. 2, 1869-72.

Tylosurus chorum Seale, Occas. Pap. Bishop Mus., vol. 4, no. 1, p. 12, 1906 (Tahiti). — Gilchrist and Thompson, Ann. South African Mus., vol. 6, p. 200, 1908-11 (Natal); Ann. Durban Mus., vol. 1, pt. 4, p. 309, 1917 (compiled).

Strongylura choram Fowler, Mem.

Bishop Mus., vol. 10, p. 73, 1928
(Tahiti); Proc. Acad. Nat. Sci.
Philadelphia, 1923, p. 37 (Madagascar).

✓38

Belone melanotus Bleeker, Natuurk.

Tijds. Nederl. Indië, vol. 1, p. 94, 1850
(1851) (type locality: Batavia, Java);
vol. 3, pp. 54, 59, 1852 (Singapore);

Verh. Batavia. Genoot. (Vnoek. Vissch.),
vol. 24, p. 14 (Batavia), p. 27 (Singapore),
1852; Act. Soc. Sci. Ind. Néerl., vol.
1, no. 3, p. 10, 1856 (Macassar). —

Günther, Cat. Fishes Brit. Mus., vol.
6, p. 238, 1866 (East Indies). —

Alleyne and Macleay, Proc. Linn. Soc
New South Wales, vol. 1, p. 348, 1876
(Cape York). — Peters, Monatsb. Akad.
Wiss. Berlin, p. 848, 1876 (New
Britain). — Jouan, Mém. Soc. Sci. Nat.

Cherbourg, vol. 21, p. 334, 1877-78 (on

Jouan, op. cit., vol. 8, p. 303, 1861,
 Kanala, New Caledonia). — Macleay,
 Proc. Linn. Soc. New South Wales,
 vol. 5, pt. 2, p. 175, 1881 (Cape York).

— Meyer, Anal. Soc. Espan. Hist. Nat.
 Madrid, vol. 14, p. 38, 1885 (Cebu).

— Elera, Cat. Fauna Filip., vol. 1, p. 573,
 1895 (Cebu). — Steindachner, Abhandl.
 Senckenburg. Gesell., vol. 25, p. 450,
 1900 (1901) (Ternate). — Günther,

Journ. Mus. Godeffroy, vol. 8, pt.,
 p. 352, 1909 (copied). — Weber, Siboga
 Exped., vol. 57, p. 123, 1913 (Makassar;
 Fische,

Karway, west Ceram; Salibabu; Saleh
 Bay, Sumbawa).

Mastacembelus melanotus Bleeker, Atlas
 Ichth. Ind. Néerl., vol. 6, p. 47, 1869-72
 (Java, Singapore, Celebes, Moluccas).

Tylosurus melanotus Fowler, Journ.
Acad. Nat. Sci. Philadelphia, ser. 2,
vol. 12, p. 501, 1904 (Padang). — Weber
and Beaufort, Fishes Indo Austral.

Archip., vol. 4, p. 127, fig. 47, 1922
(Makassar, Celebes; Moluccas;
Salibabu; Sumbawa). — Herre,

Philippine Journ. Sci., vol. 36, no. 2, p.
231, June 1928 (Vigan; Gingoog;
Sitambi).

✓39

Strongylura melanotus Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1925,
p. 200 (Delagoa Bay); 1927, p. 261
(Santa Maria; Vigan).

~~Strongylura~~ →

Tylosurus crocodilus (not Le Sueur)¹⁰¹
Fowler, Journ. Acad. Nat. Sci.
Philadelphia, ser. 2, vol. 12, p. 501,
pl. 11, upper figure, 1904 (Padang). —
Weber and Beaufort, Fishes Indo
 Austral. Archipel., vol. 4, p. 120, 1923
(compiled; part).

Strongylura crocodila Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1915,
p. 5 (Padang example); Mem. Bishop
Mus., vol. 10, p. 74, 1928 (south east
of Tahiti); vol. 11, no. 5, p. 319, 1931
(compiled); Proc. Acad. Nat. Sci.
Philadelphia, 1929, p. 603 (Hong
Kong).

the dark area at caudal to
surface white. Iris gray
scale. Soft snout with the
head and caudal brownish,
whitish.
19 mm. Crocodile River.
S. A. West. Presented by
H. Harold.

Scales $3^{or 32}_1 + 3$ in lateral line; $6^{or 7}_1$
e, 4 below, $14^{or 15}_1$ predorsal; very small
crest and front of belly; axillary
lateral scale $3^{to 3\frac{1}{2}}_1$ in fin. Scales 3
between lateral line and ventral origin.
with 18 to 25 basal radiating striae,
37 apically; circuli basal, fine.
D. III, 8, I, third simple ray entire
flexible terminally, first branched
 $\frac{1}{10}$ in head; A. III, 5, I, first branched

Tylosurus giganteus (not Schlegel)
Evermann and Seale, Bull. Bur.
 Fisher., vol. 26, p. 58, 1906 (1907) (Bacon).

Belone robusta (not Günther) Regan,
 Ann. Natal Mus., vol. 1, pt. 3, p. 243, 1908
 (Kosi Bay).

Tylosurus robusta Gilchrist and Thompson,
 Ann. Durban Mus., vol. 1, no. 4, p. 310,
 1917 (compiled).

Depth $13\frac{3}{4}$ to 15, compressed, caudal peduncle tetrahedral; head $3\frac{1}{6}$ to $3\frac{2}{3}$, width $6\frac{2}{5}$ to $6\frac{3}{4}$.

Snout $1\frac{1}{2}$ to $1\frac{4}{7}$ in head from snout tip; eye $8\frac{7}{8}$ to 9, $5\frac{7}{8}$ to $7\frac{1}{5}$ in snout, $1\frac{1}{10}$ to $1\frac{1}{5}$ in interorbital; maxillary reaches $\frac{1}{6}$ to $\frac{1}{5}$ in eye, length to front angle $2\frac{1}{3}$ to $2\frac{7}{8}$ in rest of head posteriorly; canines slightly inclined posteriorly; interorbital $8\frac{1}{8}$ to $8\frac{3}{5}$ in head from snout tip, level, with broad and rather shallow median depression.

✓ 40 Scales 240 to 285 in median lateral or axial series to caudal base; 182 to 220 predorsal forward to occiput; 20 or 21 above lateral line to dorsal origin; 17 or 18 postocular to preopercle ridge. Scales with 31 to 45 parallel

Suprascapula serrated. Scales with 7 to 9 basal radiating striae; apical denticles 49 to 52, with imperfect row of basal elements; circuli fine.

D. X, 10, I, third spine $2\frac{1}{3}$ in total head length, second ray $3\frac{2}{3}$; A. IV, 8, third spine $3\frac{2}{3}$, first ray $3\frac{1}{4}$; caudal $1\frac{1}{5}$, deeply forked, lobes sharply pointed; least depth of caudal peduncle $3\frac{3}{4}$; pectoral $1\frac{1}{2}$; ventral $1\frac{3}{4}$.

Uniform brownish, with slight olive cast above, below and on sides lighter or with silvery tints. Eye pale. Fins all pale brownish.

Bourbon, East Indies, ^{Philippines,} Greenland, Hawaii. Bleeker describes it as rosy above, silvery rosy below. Head above and snout violaceous rosy.

vertical striae, more or less complete across median or vertical axis.

D. II, 23 or II, 24, first branched ray $4\frac{1}{2}$ to $4\frac{3}{5}$ in total head length; A. II, 20 or II, 21, first branched ray $4\frac{2}{3}$ to $5\frac{1}{5}$; least depth of caudal peduncle $1\frac{3}{5}$ to $1\frac{3}{4}$ in eye; caudal $2\frac{7}{8}$ to $3\frac{1}{8}$ in total head, well forked; pectoral 4 to $4\frac{1}{5}$; ventral 5 to $5\frac{1}{2}$, reaching $2\frac{1}{5}$ to $2\frac{1}{3}$ to vent.

Back and upper surfaces brown, sides and under surfaces silvery white. Iris silvery white. Fins brownish. Dorsal and caudal darker terminally and last shorter dorsal rays blackish terminally. Edges of shorter anal rays and membranes variably dusky to

Depth $3\frac{3}{5}$; head $2\frac{9}{10}$, width $2\frac{1}{5}$. Snout $3\frac{1}{3}$ in head from snout tip; eye $3\frac{1}{8}$, greater than snout or interorbital; maxillary reaches opposite front pupil edge, expansion $2\frac{3}{4}$ in eye, length $2\frac{2}{5}$ in head from snout tip; bands of conic teeth in jaws, firmly erect, outer series enlarged and at 6 anterior canines in each; triangular patch of fine teeth on vomer and narrow band on each palatine; interorbital $3\frac{3}{4}$, nearly level; preopercle edge denticulate, Gill rakers $8+18$, lanceolate, longer than gill filaments or $\frac{1}{2}$ of eye.

Scales 62 in lateral line to caudal base and 3? more on latter; 9 scales above lateral line, 16 below, 18 predorsal forward to occiput, 6 rows on cheek.

105

blackish. Paired fins brownish.

Red Sea, Arabia, Zanzibar,
Mozambique, Portuguese East
Africa, Natal, Madagascar,
India, Singapore, East Indies,
Philippines, China, Formosa,
Japan, Queensland, Melanesia,
Polynesia. Belone timucoides
Van Hasselt 1823 has priority
over the usually accepted Belone
choram Rüppell 1835.

Analysis of the species

a. Aphareus. Gill rakers $5 + 16$ to 18 ;
scales 68 to 70 in lateral line to caudal
base.

furcatus

a. ² Fares. Gill rakers 16 to $19 + 32$ to 34 ;
scales 70 to 73 in lateral line to caudal
base.

rutilans

I have accepted the original citation of Belone coromandelica

Van Hasselt from Weber and Beaufort, who state that it is a nomen nudum.

This name, however, as grouped in Bleeker's synonymy of hastacembelus melanotus would suggest that it may be earlier than Belone timucoides and even intended for the Wahlah budder of Russell, in which case coromandelica would be the correct specific name for the present species.

107
5142, 5143. Jolo, Jolo Island.
March 5, 1908. Length 588 to
632 mm.

5008. South Tumbidao, lagoon
anchorage. February 26, 1908.
Length 708 mm.

U.S.N.M. No. 56082. Bacon.

Bureau of Fisheries (3697). Length 307 mm. As Tylosurus giganteus.

A.N.S.P. No. 27461. Padang, Sumatra. A.C. Harrison and H.L. Hiller. Length 513 mm. (from front eye edge). In arracks clear dark hyaline-green above, line of demarcation along upper side very distinct and lower sides and body ventrally silvery-white. Dorsal and caudal dark brown, tinged with green. Pectoral base green, fin blackish terminally. Anal and ventral pale-grayish, whitish basally. As Tylosurus melanotus.

A.N.S.P. ^{1 example} ~~27462~~. Padang, Sumatra. A.C. Harrison and H.L. Hiller. Length 330 mm. (lower caudal lobe damaged).

850

toothless. Preopercle entire, with broad naked flange. Vertebrae 24, of which 13 caudal. About 70 scales in a lateral series. Snout and jaws scaleless, also dorsal and anal; head with temporal region, jaws and opercles scaly; caudal minutely scaled. Dorsal low, continuous, with 10 spines and 10 or 11 rays, last soft rays well extended. Anal with 3 spines and 8 rays, last ray well extended. Caudal deeply forked, lobes long, slender, pointed. Pectoral long, falcate, lower rays extended with age. Ventral inserted below pectoral.

In arrack deep hyaline green¹⁰⁹
above, line of demarcation on
back above distinct, rest of
sides and lower surface, also
of head, silvery white. Dorsal
dusky, front rays dull olivaceous
basally. Pectoral base greenish,
fin blackish terminally. Ventral
and anal white basally, terminally
grayish or dusky. Is Tylosurus
crocodilus.

849

Genus Aphareus Cuvier

Aphareus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 485. Type Aphareus caeruleus Cuvier, designated by Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, 1913, p. 165.

Macrestinus Jordan, Evermann, Tanaka, Proc. Cal. Acad. Sci., fourth series, vol. 16, no. 20, November 14, 1927, p. 670. Type Aphareus flavivultus Jenkins, monotypic.

Fares Jordan, Evermann, Tanaka, op. cit., fourth series, vol. 16, no. 20, November 14, 1927, p. 673. Type Aphareus rutilans Cuvier, orthotypic.

Body elongate, compressed. Head pointed, compressed. Eye moderate. Mouth large, lower jaw strong and with prominent chin. Maxillary rather narrow. Teeth in jaws in several rows, minute or deciduous, without canines; palate and tongue

110

Strongylura philippina (Herre)

Tylosurus philippinus Herre,
Philippine Journ. Sci., vol. 36, no. 2,
p. 228, pl. 3, June 1928 (type locality:
Coron; Busuanga; Bato Bato,
Tawi Tawi; Sitanki, Borneo).

Depth $11\frac{1}{4}$ to $11\frac{1}{3}$, compressed
elongate body roughly pentagonal;
head $2\frac{4}{5}$ to $2\frac{9}{10}$. Snout $1\frac{2}{3}$ in
head; eye 9 to 10, 6 to $6\frac{1}{4}$ in snout,
 $1\frac{1}{4}$ to $1\frac{1}{3}$ in interorbital, $2\frac{2}{3}$ to
 $2\frac{3}{4}$ in ^{maxillary not entirely concealed by preorbital;} postorbital; end of mandible
extending beyond snout in thick,
spongy, somewhat flexible tip which
rises above so upper jaw rests
upon it and its upper profile
continuous with that of lower jaw
tip when mouth closes; canines long,
strong, pointed, vertical; head flat
above, with wide, deep, median,

11 + 20, lanceolate, equal gill filaments or $1\frac{4}{5}$ in eye.

Scales 62 to 66 in lateral line to caudal base and 4 or 5 more on latter; 7 or 8 scales above lateral line, 15 or 16 below, 18 to 20 predorsal, 6 or 7 rows on cheek. Suprascapula entire, with keels. Scales with 7 basal radiating striae; apical denticles 83 to 85, small, weak, with 2 to 9 transverse series of basal elements; circuli minute.

D. X, 11, V, third spine $2\frac{3}{5}$ to 3 in total head length; last ray $2\frac{1}{8}$ to $2\frac{1}{3}$; A. III, 8, I, third spine $3\frac{2}{5}$ to 4, last ray $2\frac{1}{8}$ to $2\frac{1}{5}$; caudal 1 to $1\frac{1}{5}$, deeply forked; least depth of caudal peduncle $3\frac{2}{5}$ to $3\frac{1}{2}$; pectoral 1 to $1\frac{1}{8}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$.

Back light olivaceous to paler and whitish below, with silvery reflections.

111

scaleless channel and small narrow elongate groove each side; space between these and outer margin of interorbital with longitudinally divergent striae; median channel narrows abruptly anteriorly and prolonged in narrow median groove to tip of beak.

Scales $194 + 10$ in lateral line; 22 above lateral line to dorsal origin; preopercle entirely finely scaled, opercle and top of head naked. Lateral line forms low keel on caudal peduncle.

D. II , 18 to II , 20, second simple ray $3 \frac{1}{5}$ in total head; A. I or II , 18 to 20, second simple ray $3 \frac{1}{2}$; least depth of caudal peduncle $1 \frac{1}{5}$ in eye; caudal forked, lower lobe larger and $2 \frac{1}{2}$ in total head; pectoral $3 \frac{4}{5}$; ventral $3 \frac{3}{4}$, origin midway between hind pupil edge and caudal base, reaches $1 \frac{1}{2}$ to anal.

Brownish above, silvery below.
Opercles and under side of head
white. Fins colorless, except upper
half of dorsal which more or less
dusky and caudal medially dusky
to blackish at outer edge. Length
390 to 462 mm. (Herve.)

Philippines, Borneo. Very close to
Strongylura crocodilus, apparently
only differing in the end of its jaws,
which may be a condition of youth.

Strongylura anastomella (Valenciennes)

Belone anastomella Valenciennes, Hist.

Nat. Poiss., vol. 18, p. 446, 1846 (type locality: China). — Günther, Cat. Fish.

Brit. Mus., vol. 6, p. 249, 1866 (Shanghai, China, Japan, India); Ann. Mag. Nat.

Hist., ser. 4, vol. 13, p. 158, 1874 (Chefoo).

— Károli, Termész. Füzetek, ^{Budapest} vol. 5, p. 182, 1881 (Meyam River).

— Steindachner, and Döderlein, Denks.

Akad. Wiss. Wien, Math.-nat. Kl., vol.

49, pt. 1, p. 293, 1885 (Tokyo). — Elera,

Cat. Fauna Filip., vol. 1, p. 573, 1895

(Luzon, Cavite, Santa Cruz). — Ishikawa

and Matsuura, Prelim. Cat. Fish. Mus.

Tokyo, p. 18, 1897 (reference).

Mastacembelus anastomella Bleeker,
Nederl. Tijds. Dierk., vol. 4, p. 149, 1873
(compiled).

Gylosurus anastomella Jordan and
Snyder, Annot. Zool. Japon., vol. 3,
p. 61, 1901 (^{reference} ~~Yokohama~~). — Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 26,
p. 531, 1903 (Yokohama, Tokyo, Matsushima,
Hakodate). — Regan, Ann. Mag. Nat. Hist.,
ser. 8, vol. 7, p. 332, 1911 (name). — Jordan
and Metz, Mem. Carnegie Mus., vol. 6,
p. 25, 1913 (^{us} Fusan). — Wu, Contrib. Biol.

115

Lab. Sci. Soc. China, vol. 5, no. 4,
p. 63, fig. 51, 1929 (Amoy). —
Sowerby, Natural. in Manchuria,
vol. 4, p. 161, 1930 (Pei tai Ho; and
Chin Wang Tao; Dalny; Lantung). —
Chu, Biol. Bull. St. John's Univ.,
Shanghai, no. 1, p. 86, Jan. 1931 (compiled).
— Anonymous, Illustr. Jap. Aquat.
Plant. Animals, vol. 1, pl. 21, fig. 8
1931.

Strongylura anastomella Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 5, 1919
(Hakodate, Japan). (Error.)

116
Strongylura anastomella Fowler,
Hong Kong Naturalist, vol. 3, nos. 3-
4, p. 262, fig. 8, Dec. 1932 (compiled).

653

Heniochus singularis Smith and Radcliffe.

Heniochus singularis Smith and Radcliffe,
Proc. U. S. Nat. Mus., vol. 40, 1911, p. 321, fig. 2.
Ullojaban Island, Luzon, Philippines,
Fomosa, East Borneo, Celebes, Gillolo Island.

Belonia ciconia Richardson, Ichth.
China Japan, p. 246, 1846 (type locality:
Chinese Seas; Canton).

Belone esocina Basilevsky, nov.

Mém. Soc. Nat. Moscou, vol. 10, p. 260,

1855 (type locality: mari prov. Shantung).

Mastacembelus esocina Bleeker, Nederl. Tijds.
Dierk., vol. 4, p. 149, 1873 (compiled).

Tylosurus esocina Chu, Biol. Bull. St. John's
Univ., Shanghai, no. 1, p. 86, Jan. 1931 (compiled).

Belone japonica (Döderlein) Steindachner
and Döderlein, Denks. Akad. Wiss. Wien,
math.-nat. Kl., vol. 49, pt. 1, p. 293, 1885
(name in synonymy).

Depth $17\frac{1}{4}$ to $22\frac{4}{5}$, compressed; head $2\frac{9}{10}$ to $3\frac{1}{8}$, width $7\frac{4}{5}$ to $12\frac{1}{3}$. Snout $1\frac{1}{3}$ to $1\frac{1}{2}$ in head; eye $12\frac{1}{4}$ to $15\frac{1}{5}$, 8 to $11\frac{1}{5}$ in snout, 1 to $1\frac{3}{5}$ in interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{2}{7}$ in eye, length to maxillary point $2\frac{1}{8}$ to $3\frac{2}{5}$ in rest of head posteriorly; canines but slightly inclined backward; interorbital 10 to $14\frac{4}{5}$, level, with broad depression.

Scales 178 to 190 in median lateral or axial series to caudal base; 122 to 125 predorsal forward to occiput; 12 above lateral line to dorsal origin; 14 postocular to vertical preopercle ridge. Scales with 23 to 26 vertical striae each side of median vertical line, more or less complete.

Aprion pristipoma Bleeker, Atlas Ichth. Ind. Néerl., vol. 8, 1876-77, pl. (58) 336, fig. 3. — Meyer, Anales Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885, p. 8 (Kordo, Mysore).

Centropristis (Aprion) pristipoma Klunzinger, Fische Roth. Meer., 1884, p. 16.

Mesoprion dentex Bleeker, Act. Soc. Sci. Ind. Néerl. (Enumerat.), vol. 6, 1859, p. 20. Sumatra; Amboina = Pristipomoides typus Bleeker, Lutjanus dentex Bleeker, Nederl. Tijds. Dierk., vol. 2, 1865, p. 278 (Amboina).

Serranus zonatus (not Valenciennes) Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 103 (part).

Anthias zonatus Günther, op. cit., vol. 1, 1859, p. 503 (part).

Mesoprion multident Day, Proc. Zool. Soc. London, 1870, p. 680. Andaman Islands.

D. II, 17, first branched ray $6\frac{1}{4}$ to $9\frac{4}{5}$ in head from snout tip; A. II, 21 to II, 24, first branched ray $4\frac{1}{5}$ to $5\frac{1}{4}$; least depth of caudal peduncle $1\frac{1}{4}$ to $1\frac{3}{5}$ in eye; caudal $3\frac{7}{8}$ to $4\frac{1}{10}$ in head to snout tip, slightly emarginate behind; pectoral $4\frac{1}{8}$ to 5; ventral $7\frac{1}{2}$ to $7\frac{7}{8}$.

Back and upper surfaces brown, sides and below silvery white. Iris whitish. Fins brownish, lower ones paler to whitish, end of dorsal lobe and caudal points dusky. Pectoral blackish terminally.

China, Japan, Korea. Though ~~reported~~ recorded from India by Günther and the Philippines by Elera, these records likely erroneous.

Depth $2\frac{7}{8}$ to $3\frac{1}{8}$; head $2\frac{3}{5}$ to 3, width 2 to $2\frac{1}{5}$. Snout $2\frac{3}{4}$ to $3\frac{2}{5}$ in head from snout tip; eye $3\frac{1}{4}$ to $3\frac{7}{8}$, 1 to $1\frac{2}{5}$ in snout, greater than interorbital in young to subequal with age; maxillary reaches $\frac{1}{3}$ in eye in young to front eye edge with age, expansion $1\frac{3}{4}$ to $2\frac{1}{5}$ in eye, length $2\frac{1}{4}$ to $2\frac{1}{3}$ in head from snout tip; teeth in jaws biserial, inner row irregular and minute, outer row larger and upper front pair as two slight canines; narrow bands of fine teeth on vomer and palatines; tongue apparently edentulous; interorbital $3\frac{4}{5}$ to $4\frac{2}{5}$, slightly elevated, level medially; preorbital width $1\frac{1}{2}$ in eye; preopercle minutely and obscurely denticulated. Gill rakers 5+13, lanceolate, $\frac{1}{4}$ greater than gill filaments or $1\frac{3}{5}$ in eye.

U. S. N. M. ^{no.} 50740. Tokyo, Japan.

W. S. Jordan and J. A. Snyder. Length
195 to 394 mm. Five examples.

U. S. N. M. no. 57603. Japan.

P. L. Jouy. Length 434 mm.

U. S. N. P., nos. 31698 to 31699.
Hakodate. Stanford University.

pl. 30 (Byron Bay, New South Wales);
 Australian Zoologist, vol. 1, pt. 7, 1919,
 p. 56, pl. 23, fig. 203a (New South Wales).
Bowersia virescens Jordan and Evermann,
 Bull. U. S. Fish Comm., vol. 22, 1902 (1903),
 p. 183 (Honolulu); vol. 23, pt. 1, 1903 (1905), p. 236,
 fig. 97 (Honolulu). — Jordan and Snyder,
 Bull. U. S. Fisher., vol. 26, 1906 (1907), p. 213
 (Honolulu).

Aprion microlepis (not Bleeker) Ogilby, Mem.
 Queensland Mus., vol. 5, 1916, p. 182 (Moreton
 Bay).

Aprion pristipoma (not Bleeker) (de Vis)
Ogilby, op. cit., vol. 5, 1916, p. 182 (Moreton
 Bay example).

Pristipomoides sieboldii (not Bleeker) Fowler,
 Mem. Bishop Mus., vol. 10, 1928, p. 193 (Honolulu;
 type of Bowersia virescens).

Strongylura crocodila (Le Sueur)

Belona crocodila (Peron and Le Sueur)

Le Sueur, Journ. Acad. Nat. Sci.

Philadelphia, vol. 2, pt. 1, 1821, p. 129.

(type locality: Mauritius).

Belone crocodilus Valenciennes, Hist. Nat.

Poiss., vol. 18, p. 440, pl. 549, 1846

(Mauritius; Java; Red Sea). — Thiollière,

Faun. Woodlark, p. 204, 1857 (Woodlark

Island). — Guichenot, Notes Ile Réunion,

vol. 2, p. 29, 1862. — Schmeltz, Cat. Mus.

Godeffroy, No. 3, p. 74, 1866 (Samoa); No.

4, p. 24, 1869 (Samoa).

122

Mastacembelus crocodilus Bleeker,
Nederl. Tijds. Dierk., vol. 3, p. 226,
1850 (part).

✓
46
Tylosurus crocodilus Weber and Beaufort,
Fishes Indo Austral. Arch., vol. 4, p.
120 (compiled; part). — Herre, Philippine
Journ. Sci., vol. 36, no. 2, p. 229, ^{pl. 4, fig. 2,} June
1928 (Tacloban, Manila Bay, Sitanaki,
Zamboanga).

Strongylura crocodila Fowler, Mem.
Bishop Mus., vol. 10, p. 74, 1928 (part);
vol. 11, no. 5, p. 319, 1931 (compiled).
Mastacembelus melanotus (not Bleeker¹⁸⁵⁰)
Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, p. 47
(not figure), 1866-72 (part).

Depth $11\frac{2}{3}$ to $14\frac{1}{6}$, body well compressed, deep; head $2\frac{9}{10}$, width $5\frac{1}{3}$ to $5\frac{2}{3}$. Snout $1\frac{3}{5}$ to $1\frac{2}{3}$ in head from snout tip; eye $10\frac{1}{4}$ to $11\frac{1}{2}$, $6\frac{2}{5}$ to $6\frac{2}{3}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{1}{3}$ in eye, length to anterior point $2\frac{1}{2}$ to $2\frac{7}{8}$ in rest of head posteriorly; lower jaw protrudes $\frac{2}{3}$ eye diameter beyond upper; teeth nearly vertically erect; interorbital $6\frac{1}{3}$ to $6\frac{1}{2}$, level, with very deep median depression.

Scales 195 to 202 in lateral axial series to caudal base; 138 to 142 predorsal forward to occiput; 19 or 20 above lateral line to dorsal origin; 16 or 17 postocular to hind preopercle ridge. Scales with 24 to 32 parallel vertical

814

Pristipomoides argyrogrammicus (Valenciennes)

Serranus argyrogrammicus Valenciennes,
Hist. nat. Poiss., vol. 8, 1831, p. 183.

Mauritius.

Etelis argyrogrammicus Sauvage, Hist. nat.
Madagascar, Poiss., 1891, p. 107, pl. 10, figs. 3,
a + b (type).

Diacope sparus Schlegel, Fauna Japonica,
Poiss., dec. 1, 1842, p. 14, Japan.

Mesoprion sparus Günther, Cat. Fishes
Brit. Mus., vol. 1, 1859, p. 188 (copied).

Lutjanus sparus Bleeker, Nederl. Tijds.
Dierk., vol. 4, 1872, p. (117) 150 (China).

Platyinius sparus Jordan and Evermann,
Proc. U. S. Nat. Mus., vol. 25, 1903, p. 344,
fig. 16 (Formosa).

Pristipomoides sparus Jordan and Thompson,
Proc. U. S. Nat. Mus., vol. 39, 1911, p. 460, fig.
5 (copied).

striae, mostly continuous over vertical axis of scale.

D. II, 19 or II, 20, first branched ray forming long lobe, 3 to $3\frac{1}{4}$ in total head length or $1\frac{2}{3}$ to $1\frac{4}{5}$ in fin base; A. II, 18 or II, 19, first branched ray $2\frac{3}{4}$ to 3 in total head or $1\frac{1}{3}$ to $1\frac{2}{5}$ in fin base; least depth of caudal peduncle 1 to $1\frac{1}{5}$ in eye; caudal $2\frac{2}{5}$ to 3 in total head; pectoral $3\frac{1}{3}$ to $3\frac{1}{2}$; ventral $3\frac{3}{5}$ to 4, nearly reaches vent.

Back and upper surface of head brown, sides and lower surfaces silvery white. Iris white. Fins all more or less brownish, lower ones paler. East Indies,

Red Sea, Mauritius, Philippines, Melanesia, Polynesia. The two examples listed below are interesting.

mm. These and 68231 show a slightly larger eye, which about equals snout. Gill rakers $5 + 15$, of which 4 or 5 rudiments above and below. Hawaiian examples have gill rakers 6 or 7 + 16 or 17.

in establishing identification with the figure of Valenciennes. The robust head and erect teeth are in agreement as well as the position of the fins, except the ventral. The right only is shown and what appears to me too greatly advanced, for it would seem to reach half way to the vent. My specimens also show much longer dorsal and anal fin lobes anteriorly. Their pectorals also are not tipped with dusky. It follows that the synonymy as given by Weber and Beaufort is therefore largely irrelevant and should fall with their Tylosurus melanotus.

~~Stokes 178 to 190 in me.~~

809

Scales 47 to 60 in lateral line to caudal base and 4 or 5 more on latter; 7 scales above lateral line, 14 to 16 below, 14 to 16 predorsal, 7 rows on cheek. Suprascapula denticulate. Scales with 9 to 12 basal radiating striae; apical denticles 72 to 90, minute, with 3 to 6 transverse series of basal elements; circuli very fine.

D. X, 11, fourth spine $2\frac{1}{4}$ to 3 in total head length, first ray $3\frac{1}{5}$ to $3\frac{2}{5}$, last ray 2 to $2\frac{7}{8}$; A. III, 8, third spine $3\frac{4}{5}$ to $4\frac{1}{3}$, first ray $3\frac{1}{2}$ to $3\frac{3}{4}$, last ray 2 to $3\frac{1}{2}$; caudal 1 to $1\frac{1}{4}$, deeply forked, slender lobes pointed and upper longer; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{4}{5}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{1}{3}$ to $1\frac{3}{5}$.

Generally light brown, lower surface little finer. Body everywhere with more

4619. Port Binanga, Subig Bay.
January 8, 1908. Length 621 mm.

5120. Sandakan market, Borneo.
March 4, 1908. Length 577 mm.

~~*Enicospira* *sp.* (Whitlock)
13 ut. imm., etc. 1, 1859, p. 18 (copied).
Enicospira *sp.* (Whitlock)
13 ut. imm., etc. 1, 1859, p. 18 (copied).
Enicospira *sp.* (Whitlock)
13 ut. imm., etc. 1, 1859, p. 18 (copied).
Enicospira *sp.* (Whitlock)
13 ut. imm., etc. 1, 1859, p. 18 (copied).~~

Pristipomoides typus Bleeker, Nat.
Tijds. Nederl. Indië, vol. 3, 1852, p.
(574) 575. Siboga, Western Sumatra. —
Günther, Cat. Fishes Brit. Mus., vol. 1,
1859, p. 380 (compiled). — Duncker, ^{mitteil.}
Naturh. Mus. Hamburg, vol. 21, 1903
(1904), p. 150 (Singapore). — Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 192
(on Bleeker)

Aprion typus Fowler, Journ. Acad. Nat.
Sci. Philadelphia, series 2, vol. 12, 1904,
p. 527 (Padang).

Dentex pristipoma Bleeker, Nat. Tijds.
Nederl. Indië, vol. 7, 1854, p. 246. Celebes.
Chaetopterus pristipoma Bleeker, Rech.
Faune Madagascar, Pollen et Van Dam,
pt. 4, 1874, pl. 10.

Aprion (Aprion) pristipoma Bleeker, Atlas
Ichth. Ind. Néerl., vol. 8, 1876-77, p. 79
(Sumatra, Celebes, New Guinea).

Strongylura punctulata (Günther)¹²⁷

Belone punctulata Günther, Proc.
Zool. Soc. London, 1871, p. 670 (type
locality: Manado, Celebes).

Tylosurus punctulatus Weber and
Beaufort, Fishes Indo Austral.
Archip., vol. 4, p. 129, fig. 48, 1922
(Balikpapan, Borneo).

Depth nearly 12, body moderately
compressed, caudal peduncle only
little higher than broad; head $2\frac{4}{5}$. Eye nearly $7\frac{1}{3}$ in snout, $1\frac{1}{2}$ in
interorbital, $2\frac{3}{5}$ to $2\frac{4}{5}$ in postorbital;
maxillary entirely hidden by preorbital;
mandible strong, height below pupil
about equals vertical eye diameter;
canines moderate, subulate, straight.

128

tongue smooth; head above with deep broad median groove, tapering anteriorly and prolonged into narrow median groove on beak; superciliary region with numerous fine striae.

Scales 225 in lateral series; 18 above lateral line to dorsal origin. Lateral line forms distinct keel on caudal peduncle which not black.

D. II, 19, median and hinder rays shorter than prolonged anterior rays, origin above second anal ray; A. II, 18 to II, 19, rays like dorsal only first much longer; caudal forked, lobes pointed; P. I, 13, somewhat longer than postorbital; V. I, 5, long as pectoral, base midway between eye center and caudal base.

Back dark, with green reflection. Belly white or light blue gray. Sides with orange spots. Fins dusky. Length 575 mm. (Weber and Beaufort.)
East Indies.

129

Strongylura gaviaboides (Castelnau)

Belone gaviaboides Castelnau, Proc. Zool.
Acclimat. Soc. Victoria, vol. 2, p. 142,
1873 (type locality: Fremantle, Western
Australia). — Macleay, Proc. Linn. Soc.
New South Wales, vol. 5, pt. 2, p. 179,
1881 (Western Australia).

Tylosurus gaviaboides McCulloch,
Austral. Mus. Mem., no. 5, pt. 1, p. 99,
June 29, 1929 (Western Australia;
Queensland).

Body rather compressed, depth less
than pectoral length; head $3\frac{1}{2}$. Snout
much longer than rest of head, with
long groove above; eye 2 in interorbital;
teeth very fine, numerous, with line of
larger conical ones each side of both
jaws, well spaced, smaller and closer

toward rictus; palate and tongue smooth; head flat above, with 2 large radiated impressions.

Scales small. Upper surface of head smooth, with elongated space before eyes with small scales. No lateral edges to tail.

D. 22, front rays form lobe, middle and hind rays short; A. 23; caudal strongly emarginated, lower lobe longer; P. 12.

Dark brown in spirit, silvery below. Snout black. Fins yellow. Length 1025 mm. (Castelnau.)

Western Australia, Queensland.

861

D. X, 11, I, spines flexible, fourth $2\frac{3}{5}$ in total head length, first ray 4, last ray 2; A. III, 8, I, spines flexible, third spine $3\frac{2}{3}$ to $4\frac{1}{2}$, first ray $3\frac{7}{8}$ to $4\frac{4}{5}$, last ray 2; caudal 1, deeply forked, with long, slender, pointed lobes; least depth of caudal peduncle $4\frac{1}{8}$ to $4\frac{1}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{5}$; ventral $1\frac{1}{2}$ to $1\frac{2}{3}$.

Back light brown, becomes pale to whitish below. Body with silvery and lilac reflections. Iris light yellowish white. Fins all uniform pale brown.

Red Sea, Arabia, Reunion, Ceylon, New Guinea, Hawaii. Known chiefly by its increased gill rakers. In my figure of the type of Lipharus thompsoni the infraorbital is shown

Strongylura auiceps Fowler and Bean

Strongylura auiceps Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 63, p. 12, 1923

(type locality: Fiji or Samoa). —

Fowler, Mem. Bishop Mus., vol. 10,
p. 74, 1928 (copied).

Depth 20, body moderately compressed,
short caudal peduncle compressed;
head $3\frac{1}{6}$, width $7\frac{3}{5}$. Snout $1\frac{2}{5}$ in
head from snout tip; eye $11\frac{1}{4}$, $8\frac{1}{5}$
in snout, $1\frac{1}{4}$ in interorbital; maxillary
reaches $\frac{1}{4}$ in eye, length to anterior
point $1\frac{7}{8}$ in rest of head posteriorly;

132

canines slightly inclined posteriorly; interorbital $8\frac{7}{8}$, level, with very shallow narrow median depression.

Scales 300 in lateral axial series to caudal base; 218 predorsal forward to occiput; 20 above lateral line to dorsal origin; 22 postocular to preopercle edge. Scales with 32 to 44 parallel vertical striae each side, usually complete over median axis.

D. II, 22, I, first branched ray (tips broken) $6\frac{1}{4}$ in total head; A. II, 20, I,

first branched ray $5\frac{4}{5}$; least depth of caudal peduncle $1\frac{3}{5}$ in eye; caudal (damaged) $4\frac{2}{5}$? in total head length; pectoral $4\frac{1}{2}$; ventral $5\frac{7}{8}$, reaches $2\frac{1}{2}$ to vent.

Back olive brown, sides and lower surfaces evidently paler to whitish. Fins all brownish, apparently without black.

Polynesia. Apparently a valid species, known by its very long, slender beak, deep and wide occipital depression, in combination with its other characters.

U.S.N.M. no. 83422, type. Fiji. Wilkes Exploring Expedition. Length 485 mm. (caudal damaged).

806

Pristipomoides microdon (Steindachner)

Aprion microdon Steindachner, Sitzb. Ber.
Akad. Wiss. Wien, vol. 74, 1876, p. 206.
Hawaiian Islands.

Apsilus microdon Jenkins, Bull. U. S.
Fish Comm., vol. 22, 1902 (1903), p. 451
(Honolulu). — Jordan and Evermann, Bull.
U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p.
234 (Honolulu, Hilo, Kailua).

Platyurus microdon Snyder, Bull. U. S.
Fish Comm., vol. 22, 1902 (1904), p. 527
(Honolulu). — Jordan and Snyder, Bull.
U. S. Fish Comm., vol. 26, 1906 (1907), p. 213
(Honolulu).

Aphareus roseus Castelnau, Proc. Linn. Soc.
New South Wales, vol. 3, 1879, p. 373. Port
Jackson.

Aprion roseus McCulloch, Records Australian
Mus., vol. 11, no. 7, February 20, 1917, p. 173,

134

Strongylura indica (Le Sueur)
Belona indica Le Sueur, Journ. Acad.
Nat. Sci. Philadelphia, vol. 2, pt. 1, p.
130, 1820 (type locality: Indian Ocean).

Strongylura indica Fowler, Copeia, no. 122,
p. 82, nov. 20, 1922 (Hawaii); Bull. Bishop
Mus. 22, p. 6 (Guam), p. 23 (Honolulu),
1925; Mem. Bishop Mus., vol. 10, p. 73,
1928 (Honolulu, Tubuai, Guam); vol.
11, no. 5, p. 319, 1931 (Honolulu); Proc.
U. S. Nat. Mus., vol. 30, art. 6, p. 5, 1932
(Taipi Bay, Nukuhiva, Marquesas);
Hong Kong Naturalist, vol. 3, nos. 3-4, p. 263, ^{fig. 9,}
Dec. 1932 (Hong Kong).

5' Belone gigantea Schlegel, Fauna
japonica, Poiss., pts. 10 to 14, p. 245,
1846 (type locality: seas of Japan).

— Bleeker, Verh. Batav. Genoot. (Nat. Ich.
Japan), vol. 25, p. 18, 1853 (reference);

→ Natuurk. Tijds. Nederl. Indië, vol. 13,

↑ — Brevoort, Narr. Exped. Japan, Perry, p. 280, pl.
7, fig. 2, 1856 (Lew Chew). — Bleeker,

Nederl., vol. 3, no. 3, p. 21, 1857-58

(Japan); Natuurk. Tijds. Nederl. Indië,
vol. 15, p. 243, 1858 (Singapore); vol.

18, p. 356 (Bawean); Act. Soc. Sci.

Ind. Nederl. (Acht. Sumatra), vol. 8,

p. 55, 1859 (Bengkulan; Siboga);

5' Belone gigantea Schlegel, Fauna
japonica, Poiss., pts. 10 to 14, p. 245,
1846 (type locality: seas of Japan).

— Bleeker, Verh. Batav. Genoot. (Nat. Ich.
Japan), vol. 25, p. 18, 1853 (reference);
→ Natuurk. Tijds. Nederl. Indië, vol. 13,
p. 385, 1857 (Batjan); Act. Soc. Ind.
Nederl., vol. 3, no. 3, p. 21, 1857-58
(Japan); Natuurk. Tijds. Nederl. Indië,
vol. 15, p. 243, 1858 (Singapore); vol.
18, p. 356 (Bawean); Act. Soc. Sci.
Ind. Nederl. (Acht. Sumatra), vol. 8,
p. 55, 1859 (Bengkulan; Siboga);

Naturk. Tijds. Nederl. Indië, vol. 20,
 p. 141 (Badjoea, Boni), p. 142 (Cocos-
 Keeling)¹⁸⁵⁹⁻⁶⁰; vol. 21, p. 139, 1860 (Muntok,
 Banka). — Günther, Journ. Mus.

Godeffroy, vol. 8, pt. 16, p. 350, 1909
 (Indian Ocean; tropical Pacific). —

Weber, Siboga Exped., vol. 57, Fische,
 p. 122, 1913 (Makassar; Kawa, west
 Ceram).

Mastacembelus giganteus Bleeker, Versl.
 kon. Akad. Wet. Amsterdam, vol. 16,
 p. 368, 1864 (Aru Islands).

Tylosurus giganteus Jordan and
Snyder, Annot. Zool. Japon., vol. ,
p. 61, 1901 (reference). — Jenkins, Bull.
U. S. Fish Comm., vol. 22, p. 433, 1902
(Honolulu). — Jordan and Starks,
Proc. U. S. Nat. Mus., vol. 26, p. 529,
1903 (Nagasaki; Wakanoura). —
Jordan and Evermann, Bull. U. S. Fish
Comm., vol. 23, pt. 1, p. 124, fig. 39
(copied), 1903 (1905) (Honolulu; Hilo).
— Seale, Decas. Pap. Bishop Mus.,
vol. 4, no. 1, p. 12, 1906 (Tubuai, Austral
Islands). — Jordan and Seale, Bull.

Bur. Fisher., vol. 25, p. 207, 1905 (1906)
 (Samoa); vol. 26, p. 8, 1906 (1907)
 (Cavite); Proc. U. S. Nat. Mus., vol.
 28, p. 773, 1907 (Negros). — Evermann
 and Seale, Bull. Bur. Fisher., vol.
 26, p. 58, 1906 (1907) (Bacon; part).
 — Jordan and Richardson, Bull. Bur.
 Fisher., vol. 27, p. 249, 1907 (1908)
 (Manila; Iloilo). — Franz, Abhandl.
 Bayer. Wiss. 4 band
 Akad. München, Suppl., ~~1881~~ 1, p.
 24, 1914 (Yokohama; ~~Japan~~). — Herre,
 Philippine Journ. Sci., vol. 36, no. 2, p.
 226, pl. 4, fig. 1, June 1928 (Manila,

Calapan, Mangarin, Bacon, Bantayan,
 Estancia, Culion, Dumaguete, Panacan,
 Zamboanga; & itanki). — Chu, Biol.
 Bull. St. John's Univ., Shanghai, No. 1,
 p. 86, Jan. 1931 (reference).

Belone annulata Valenciennes, Hist. nat.
 Poiss., vol. 18, p. 447, pl. 550, 1846
 (type locality: Celebes; Tongatabu;
 Seychelles; Pondicherry). — Cantor,
 Journ. Asiatic Soc. Bengal, vol. 18, pt.
 1, p. 244, 1849 (1850) (Pinang). —
Jerdon, Madras Journ. Liter. Sci., 1851, p. 147. —
Bleeker, Natuurk. Tijds. Nederl. Indië,
 vol. 3, p. 749, 1852 (Celebes); Verhand.

- (Snoek.), vol. 24, p. 27, 1852 (Pinang);
Batavia. Genoot. (hal. Ich. Bengal.),
vol. 25, pp. 8, 72, 1853 (compiled).
— Day, Fishes of Malabar, p. 165, 1865. —
Günther, Cat. Fishes Brit. Mus., vol. 6,
p. 240, 1866 (Pinang, China, Formosa, Gillolo).
— Day, Proc. Zool. Soc. London, 1865, p. 369 (~~forchin, malabar~~).
— Lilleyne and Macleay, Proc. Linn. Soc.
New South Wales, vol. 1, p. 349, 1876
(Percy Island; Cape York). — Martens,
Preuss. Exped. Ost Asien, vol. 1, pp. 235,
325, 400, 1876 (Singapore). — Day,
Fishes of India, pt. 3, p. 510, pl. 120,
fig. 1, 1877. — Klunzinger, Sitz. Ber.
Akad. Wiss. Wien, math.-nat. Kl., vol. 80

pt. 1, p. 413, 1879 (Port Denison). —

Günther, Rep. Voy. Challenger, vol. 1,
pt. 6, p. 36, ¹⁸⁸⁰ (Levuka, Ovalu, Kandavu,
Fiji), p. 50 (Somerset). ~~1880~~. —

Macleay, Proc. Linn. Soc. New South
Wales, vol. 5, pt. 2, p. 176, 1881 (Percy
— Károli, Termesz. Füzetek, vol. 5, p. 181, 1881 (Singapore).
Islands; Cape York). — Day, Fauna

British India, Fishes, vol. 1, p. 419, 1889.

— Sauvage, Hist. nat. Madagascar, Poiss.,
p. 526, 1891 (reference). — Elera, Cat.

Fauna Filip., vol. 1, p. 573, 1895 (Luzon;
Batangas; Masugbu). — Ishikawa and

Matsuura, Prelim. Cat. Mus. Tokyo,

142

p. 18, 1897 (reference). — Steindachner,
Denks. Akad. Wiss. Wien, math.-nat.
Kl., vol. 70, p. 512, 1901 (Honolulu;
Samoa).⁵¹ — Duncker, Mitteil. naturh.
Mus. Hamburg, vol. 21, p. 169, 1903
(1904) (reference). — Volz, naturh. Tijds.
Nederl. Indië, vol. 66, p. 176, 1907
(Siboga; Benkulen).

Mastacembelus annulatus Bleeker,
Versl. Akad. Wet. Amsterdam, ser. 2,
vol. 2, p. 293, 1868 (Rio, Bintang);
Atlas Ichth. Ind. Néerl., vol. 6, p. 48,
pl. () 258, fig. 3 (Java, Madura, Bawean,
Cocos, Sumatra, Singapore, Pinang,
Banka, Celebes, Batjan, Pinang).

Batjan, Ternate, Amboina) 1869-72;
Nederl. Tijds. Dierk., vol. 4, p. 149,
1873 (Hong Kong).

Mastacembelus annulatus Bleeker,
Nederl. Tijds. Dierk., vol. 4, p. 154,
1873 (Hong Kong; error).

Tylosurus annulatus Seale, Philippine
Journ. Sci., vol. 5, no. 4, p. 267, Oct. 1910
(Borneo; error).

Tylosurus annulatus Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4, p. 126,
1922 (Nias; Pulu Weh; Batavia and
Semarang, Java; Lombok; Makassar,

Mastacembelus annulatus Bleeker,
Nederl. Tijds. Dierk., vol. 4, p. 154, 1873
(Hong Kong).

Celebes; Ambon; Banda; Kawa,
Ceram; Wilhelmshand, New Guinea).

Belone timucoides (not ^{Van Hasselt} müller)

Journ. Indian Archip., vol. 3, pp.

67, 68, 1849.

→

↑ Belone melanurus Bleeker; Verh.
Batavia. Genoot. (Madura), vol. 13,
22, p. 11 (type locality: Madura
Strait near Kammal; Surabaya),
p. 5 (Kammal). — Kner, Reise
Novara, Fische, p. 321, 1865.
Mura, p. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

3, p. 235 (Amboina; Moluccas), 249, 546,
549 (Amboina), 1852; vol. 4, p. 597
(Halmaheira), 1853; vol. 5, p. 69 (Solor),

144

Celebes; Ambon; Banda; Kawa,
Ceram; Wilhelmshand, New Guinea).

Belone timucoides (not ^{Van Hasselt} Müller)

Journ. Indian Archip., vol. 3, pp.
67, 68, 1849.

→ Belone cylindrica Bleeker, Verh. Batavia.
Genoot. (Snoek. Visch.), vol. 24, p. 13,
1852 (type locality: Batavia; Surabaya;
Kamall; Siboga); Naturk. Tijds. Nederl.
Indië, vol. 2, p. 472, 1851 (Rio); vol.
3, p. 235 (Amboina; Moluccas), 249, 546,
549 (Amboina), 1852; vol. 4, p. 597
(Halmaheira), 1853; vol. 5, p. 69 (Solor),

145

p. 154 (Macassar), 1853; vol. 6, p. 458
(Amboina), 1854; vol. 7, p. 228
(Macassar; Manado), p. 314 (Bantern),
1854; vol. 8, p. 437¹⁸⁵⁵₁ (Bonthaian, Celebes);
vol. 9, p. 492, 1855 (Batjan); vol. 10,
p. 362, 1856 (Ternate); vol. 12, p. 193
(Ternate), p. 294 (Boleling, Bali), 1856;
Act. Soc. Sci. Ind. Néerl., vol. 1, no. 3,
p. 5 (Manado), p. 10 (Macassar), 1856;
vol. 1, no. 5, p. 7, 1856 (Amboina); vol.
2, no. 7, p. 7, 1857 (Amboina). — Kner,
Reise Novara, Fische, p. 321, 1865 (Hong
Kong; Madras).

146

Belone choram (not Forskål) (Günther,
Fishes of Zanzibar, p. 117, 1865.

Mastacembelus choram Bleeker,
Nederl. Tijds. Dierk., vol. 3, p. 277,
1866.

→ Strongylura fijiense Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 63, p. 13,
1923 (type locality: Fiji); Mem.
Bishop Mus., vol. 10, p. 74, 1928
(copied).

{ ? Belone koseirensis Klunzinger, Verh.
zool. bot. Ges. Wien, vol. 21, p. 579,
1871 (type locality: Koseir, Red Sea).

147

Depth $14\frac{1}{2}$ to $14\frac{7}{8}$, but slightly compressed or mostly subcylindrical; head $3\frac{1}{10}$ to $3\frac{1}{4}$, width $4\frac{7}{8}$ to $6\frac{1}{8}$. Snout $1\frac{3}{5}$ in head from snout tip; eye $8\frac{1}{3}$ to $11\frac{1}{4}$, $5\frac{2}{3}$ to $7\frac{1}{5}$ in snout, $1\frac{1}{3}$ to $1\frac{2}{3}$ in interorbital; maxillary reaches $\frac{1}{8}$ to $\frac{1}{4}$ in eye, length to anterior point $2\frac{7}{8}$ to $3\frac{1}{6}$ in rest of head posteriorly; canines nearly vertically erect or slightly curved forward; interorbital $5\frac{7}{8}$ to 7, level, with broad shallow median depression.

Scales 320? to 355 in lateral axial series to caudal base; 170 to 265 predorsal; 21 to 23 above lateral line to dorsal origin; 24 to 26 postocular to vertical preopercle ridge. Lateral line with keel along caudal peduncle side

~~Tropidinius~~

~~Lipsilus~~ zonatus (Valenciennes)

789

Serranus zonatus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 509. Mauritius. —

Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 503 (compiled).

Anthias zonatus Günther, op. cit., vol. 1, 1859, p. 503 (compiled).

Etelis zonatus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 109, pl. 11, fig. 3 (type; Madagascar).

Lipsilus zonatus Fowler, Copeia, no. 142, May 20, 1925, p. 20 (note on Hawaiian example); Bull. Bishop Mus., no. 22, 1925, p. 26 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 192 (Honolulu, types of Serranus brighami and Rooseveltia aloha).

and on caudal fin base. Scales with 26 to 31 striae each side of vertical median axis, more or less continuous.

D. II, 20, I or II, 21, I, first branched ray $4\frac{1}{8}$ to $4\frac{1}{5}$ in head from snout tip; A. II, 16, I to II, 22, I, first branched ray $3\frac{3}{5}$ to $4\frac{1}{2}$; least depth of caudal peduncle $1\frac{1}{4}$ to $1\frac{2}{5}$ in eye; caudal $2\frac{2}{3}$ to $2\frac{4}{5}$ in head from snout tip; forked; pectoral $3\frac{1}{3}$ to $3\frac{2}{3}$; ventral 4 to $4\frac{1}{8}$, reach $2\frac{2}{3}$ to vent.

Back brown, also head above, lower surfaces silvery white. Iris white. Fins more or less brownish. Dorsal, caudal and pectoral dusky terminally, also caudal medially. Posterior part of dorsal dusky. Lower fins pale to whitish.

Genus Tropidinius Poey

Tropidinius (Gill) Poey, Repert. Fisico
nat. Cuba, vol. 2, 1868, p. 296. Type

Mesopomus arnillo Poey = Upsilon dentatus
Guichenot, monotypic.

Roosevelti (Jordan and Evermann) Jordan
and Seale, Bull. Bur. Fisher., vol. 25, 1905
(1906), p. 265. Type Serranus brighami Seale
= Serranus gnatus Valenciennes, monotypic.

Body compressed; rather deep. Head
large. Mouth moderate. Maxillary
long, reaches beyond front of pupil.
Canines small. No teeth on tongue.
Preopercle edge minutely denticulate.
Gill rakers 5 to 7 + 12 to 12. Caudal
lobes subequal, not ending in filaments.
Pectoral longer than ventral, reaches
anal.

149

India, Pinang, Singapore, East
Indies, Philippines, China, Formosa,
Riu Kiu, Japan, North Australia,
Queensland, Micronesia, Polynesia,
Hawaii. Known chiefly by the long
black posterior dorsal rays, these
usually forming a broad rounded
lobe high as anterior pointed lobe
of fin. It greatly suggests
Athlennes hians, as the two species
are shown on Bleeker's plate and
only distinguished by the thinner
body of the former.

The type of Strongylura fijiense
is undoubtedly the present species.
Its very fine scales, counted along
the sides of the back as 450, are
much smaller and more numerous
or with finely crowded appearance,
than those below the median lateral

long, slender, pointed lobes.
Brown, paler below. Dorsals
with several ill defined longitudinal
darker streaks. Length 750 mm.
(Palencienne.)

Red Sea, Delagoa Bay, Reunion, Ceylon.
Also in the Eastern Atlantic.

or axial line where they would number about 270. The discrepancies in the counts are due to the method of counting, this greatly enhanced by their irregularities. Thus in a given space as 10 mm the scales may vary 13 to 18, or even more.

Belone boseirensis Klunzinger is imperfectly described and may be the present species:

Depth 18; head $3\frac{3}{4}$. Snout $4\frac{1}{2}$ in body; eye $7\frac{1}{4}$ in head, somewhat large, greater than 1; postorbital $1\frac{3}{4}$ in head; tongue smooth; lower jaw projects; supraorbital with 3 ridges.

D. 20 (22?), last ray not long as body depth, reaches caudal base; A. 19 (22?); P. 12.

Above greenish gray, sides and

Depth $3\frac{1}{8}$; head $3\frac{3}{4}$. Snout $3\frac{1}{4}$ in head from snout tip; eye $3\frac{2}{5}$, $1\frac{1}{10}$ in snout; maxillary reaches $\frac{1}{5}$ in eye, expansion $2\frac{1}{3}$ in eye, length $2\frac{4}{5}$ in head from snout tip; teeth in villiform bands in jaws, without canines; teeth on vomer and palatines, none on tongue; interorbital elevated. Scales 65 in lateral line; 7 scales above lateral line, 17 below, predorsal about 21 forward to occiput or nearly opposite hind eye edge, 7 rows on cheeks inclusive of preopercle flange. D. X, 10, third spine 2 in total head length, first ray 3; A. III, 8, third spine $3\frac{1}{2}$, first ray 3; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $1\frac{1}{4}$; ventral $1\frac{2}{3}$; caudal $2\frac{1}{2}$ in combined head and body to caudal base, deeply forked with

belly silvery. Lateral blackish longitudinal row of obsolete blackish spots. Yellowish lateral streak to below middle of dorsal. Fins clear. Caudal blackish, also last dorsal rays. Length 515 mm.

862

as much too broad. Likewise the figure does not show the lower lobe of the pectoral or the last dorsal and anal rays prolonged. The figure in question also has the first dorsal spine too long. In materials before me the penultimate dorsal ray is only $\frac{1}{3}$ length of last ray.

5785. Baganga Bay, Mindanao.

May 13, 1908. Length 330 mm.

One example. Camp Overton Anchorage, Mindanao. Electric light. August 5, 1909. Length 137 mm.

5504. Catbalogan, Samar. April 14, 1908. Length 329 mm.

5511. Catbalogan. April 15, 1908. Length 558 mm.

One example. East side Tagbalaran Strait, Bohol. April 9, 1908. Length 47 mm.

10876, 10877. Jolo Anchorage, Jolo. March 5, 1908. Length 245 to 379 mm.

5863. Malabang, Mindanao. May 21, 1908. Length 458 mm.

✓ 4509. Manila market. December 12, 1907. Length 317 mm.

6327. Manila market. July 11, 1908. Length 354 mm.

785

Apsilus fuscus Valenciennes

Apsilus fuscus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 549, pl. 168 bis. Porto Praya, Cape Verde Islands. — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 82 (compiled). — Guichenot, notes Ile Réunion, vol. 2, 1862, p. 24. — Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, 1870, p. 705 (Koseir, Red Sea). — Jordan and Starks, Annals Carnegie Mus., vol. 11, nos. 3-4, 1917, p. 450 (Colombo, Ceylon). — Barnard, Annals South African Mus., vol. 21, pt. 2, October 1927, p. 647 (Delagoa Bay).

153

4763, 4764, 4765. Hogas Point,
Panay. February 4, 1908. Length 347
to 375 mm.

20494. Port Galera, Mindoro.
June 9, 1908. Length 253 mm.

8219. River at Pasacao, Ragay
Gulf, Luzon. March 9, 1909. Length
331 mm.

4918. Simulac Island. February
20, 1908. Length 610 mm.

5580. San Miguel Harbor, Ticao
Island. April 21, 1908. Length 330 mm.

7122. San Vicente Harbor, Luzon side.
November 13, 1908. Length 365 mm.

154

D. 5561. Teomabal Island (NW.),
S. 36° W., 0.2 mile (lat. 5°50'45"N.,
long. 121°01'15"E.), vicinity of Jolo.
September, 19, 1909. Length 38 to
183 mm. Twenty examples. All
young and show bases of upper
caudal rays blackish.

11742. Sandakan market, Borneo,
Dutch East Indies. March 2, 1908.
Length 308 mm.

U. S. N. M. no. 50738. Wakanoura.
R. S. Jordan and J. O. Snyder. Length
478 to 566 mm. As Tylosurus
schismatorhynchus. Two examples.

U. S. N. M. no. 52031. Negros. Dr.
Bashford Dean. Length 425 mm.
As Tylosurus giganteus.

U. S. N. M. no. 52366. Apia, Samoa.
Bureau of Fisheries (07571). 1905.
Length 460 mm. As Tylosurus
giganteus.

U. S. N. M. no. 57604. Japan.
 P. L. Jouy. Length 390 to 508 mm.
 Two examples. As Tylosurus
schismatorhynchus.

U. S. N. M. no. 57948. Zamboanga.
 August 21, 1906. Dr. E. S. Mearns.
 Length 85 mm. As Tylosurus leirus.
 With large black cutaneous flap on
 the under surface of the mandible
 and the long black posterior dorsal
 rays reach $\frac{3}{4}$ in caudal fin.

U. S. N. M. no. 72167. Iloilo. R. C.
 Mac Gregor. Length 199 mm. As
Tylosurus giganteus.

U. S. N. M. no. 83421. Fiji. Wilkes
 Exploring Expedition. Length 738 mm
 (caudal tip damaged). Type of
Strongylura fijiense.

A. N. S. P., no. 29639. Maui, Hawaiian
 Islands. R. C. Mac Gregor. Stanford University.

Strongylura appendiculata (Klunzinger)

Belone appendiculatus Klunzinger,

Verh. zool. bot. Ges. Wien, vol. 21, p.

580, 1871 (type locality: Red Sea).

Belone appendiculata Günther, Journ.

Mus. Godeffroy, vol. 8, pt. 16, p. 351, fig.

(head), 1909 (Muscat; Solomons).

Thalassosteus appendiculatus Jordan,

Evermann, Tanaka, Proc. Cal. Acad. Sci.,

ser. 4, vol. 16, p. 651, Nov. 14, 1927 (Honolulu).

Strongylura appendiculata Fowler, Mem.

Bishop Mus., vol. 10, p. 74, 1928 (compiled).

Depth 17 to 19, body moderately compressed, subcylindrical tail little higher than wide; head $3\frac{1}{2}$. Snout $5\frac{1}{2}$ to 6 in head; eye $8\frac{1}{2}$ to 9, somewhat large; behind tip of lower jaw low compressed bony beel $\frac{1}{3}$ eye depth or less; teeth moderately strong, rough area of jaw edges moderately wide; tongue smooth. Gill opening extends below front eye edge.

Scales moderately small. Lateral line low, with slight beel on tail.

D. 26, begins behind anal origin, last rays reach nearly to caudal; A. 22; lower caudal lobe longer; P. 12; ventral $1\frac{1}{2}$ times longer than eye, origin midway between hind eye edge and caudal base.

1
The Fishes of the Families Pseudochromidae,
Lobotidae, Tempheridae, Priacanthidae,
Lutjanidae, Pomadasysidae, and
Theraponidae, collected by the
United States Bureau of Fisheries
Steamer "Albatross," chiefly in
Philippine Seas and adjacent
waters

By
Henry W. Fowler
Of the Academy of Natural Sciences of
Philadelphia

Sea green above, below silvery.
Snout, teeth and top of head
green. Fins blackish. Anal with
black spot above. Length 470 to
1000 mm. (Klunzinger.)

Red Sea, Arabia, Solomons,
Hawaii. The Hawaiian specimen,
forming the basis of the genotype
of *Thalassosteus* seems to agree.
It is described with D. 25, A. 23,
P. 13, scales 570. Jordan, Evermann
and Tanaka wrongly credit Günther
as the author of the species instead
of Klunzinger.

Introduction

2

In continuation of the study of the Albatross collections this paper represents the fourth installment in which I have been engaged. It includes the second part of the percoid series, the majority of which are valued market or commercial fishes. As in the preceding volumes most of the localities relate to the Philippines, though the other localities in the Netherlands Indies, China, Formosa and Oceania visited by the Albatross are also included. The prefatory remarks of the other volumes as to the organization and personnel of the scientific staff under the direction of Dr. Hugh M. Smith, apply equally well in the present work.

159

Rhaphiobelone new genus

'ράφιον, a little needle, from ραφίς needle
+ Belone, with reference to the very slender jaws.

Type. — Rhaphiobelone ^{dammermanni} ~~philippina~~, new species.

Body elongate, moderately compressed, slender. Head long, jaws prolonged into extraordinary slender and elongated points so head barely less than rest of entire body. Upper jaw only half or less than half of lower jaw and no dentition on lower anterior prolonged portion of mandible. Canines small, though

well developed. Eye rather large. Maxillary concealed. Interorbital flattened. Scales small, not present on head except occipital region. Dorsal inserted at first fifth of anal base, front rays but little higher than others. Anal much larger and with front rays elevated, though not forming very distinct lobe. Caudal peduncle broadly depressed, so its width much greater than its depth. Caudal truncate. Pectoral high, moderate. Ventral inserted

midway between nasal cavity and caudal base, small, reach $3\frac{4}{5}$ to vent. Color with silvery.

diagnosis.

This well marked genus differs from the known genera in the above combination of characters. It greatly suggests Belone in its extremely depressed and similar caudal peduncle. On the contrary it differs at once from Belone in the absence of gill rakers. It further differs from this and all the known genera in the extraordinary prolonged

long, slender, needle-like jaws.

Rhaphiobelone ^{daguerreumani} ~~philippina~~ new species

Depth 33 to 39, body with more or less flattened sides, width of caudal peduncle $1\frac{1}{3}$ to $1\frac{2}{5}$ in eye; head $2\frac{1}{10}$ to $2\frac{1}{5}$, width $18\frac{2}{3}$ to $23\frac{1}{3}$. Snout $1\frac{1}{3}$ to $1\frac{2}{5}$ in head measured from snout tip; mandible tip to eye $1\frac{1}{5}$ to $1\frac{1}{4}$; eye $13\frac{1}{3}$ to 15 in head from snout tip, $9\frac{2}{3}$ to $11\frac{1}{3}$ in snout from snout tip, little greater than interorbital; maxillary point to eye $3\frac{4}{5}$ to 4 in head posteriorly;

canines vertically erect; interorbital $19\frac{1}{2}$ to $23\frac{2}{3}$, level, with wide deep median depression.

Scales 190 to 200 in lateral axial series to caudal base and 7 to 9 more on latter; 122 to 126 predorsal forward to occiput; 14 above lateral line to dorsal origin. Lateral line continuous along lower side of body at least far back as anal base and tubes simple.

D. II, 16 or II, 17, first branched ray
11 to 14 in total head length; A.
II, 20 to II, 23, first branched ray
 $7\frac{1}{2}$ to $7\frac{3}{5}$; caudal $6\frac{7}{8}$ to $7\frac{2}{3}$,
rounded, truncate behind; pectoral
 $7\frac{4}{5}$ to $8\frac{1}{2}$; ventral $13\frac{3}{4}$ to 14,
reaches 3 to $3\frac{7}{8}$ to vent.

Back and upper surfaces brown,
sides and lower surfaces silvery
white. Iris silvery white. Two dark
median parallel lines down back.
Silvery gray lateral axial band,
widest on tail or along and close

below caudal expansion. Fins all more or less pale or whitish.

Philippines.

Diagnosis. Contained in genus.

Type. — U. S. N. M. No.

Three examples. Jolo, Jolo Island.

Electric light. February 8, 1908.

Length 82? to 103? (beak broken) mm.

Three examples. Taal anchorage.

Electric light. February 20, 1909.

Length 108 to 162 mm. Largest type,

other 2 paratypes.

19849. Maculabo Island. June 13,
1909. Length 165 mm. (beak damaged).

One example. Pandanon Island.

March 24, 1909. Length 75 mm.

One example. Port Dupon.

March 17, 1909. Length 53 mm.

20830. Varadero Bay, Mindoro.

July 23, 1908. Length 135? (beak
damaged) mm.

167

Genus Athlenes Jordan and Fordice
Athlenes Jordan and Fordice, Proc.
U. S. Nat. Mus., vol. 9, p. 342, 1886.

(Type, Belone hians Valenciennes,
monotypic.)

Athlenes Jordan and Evermann, Bull.
U. S. Nat. Mus., no. 47, pt. 1, p. 717,
1896. (Type, Belone hians Valenciennes,
virtually.) (Corrected orthography.)

Body elongate, very slender, little
compressed. Both jaws extended as beak,
lower somewhat longer, much longer
in young and very young suggestive

168

of hemiramphids. Each jaw armed with band of small sharp teeth, beside which series of long wide-set sharp conical unequal teeth. No teeth on vomer or palatines. Gill rakers obsolete. Bones usually more or less green. Scales small, thin. Lateral line extends along lower side of belly, becomes median on tail. No finlets. Dorsal fin mostly elevated in front. Caudal short, unequally lunate or forked. Pectorals moderate. Ventrals small, inserted behind

middle of body.

Comparatively large voracious
fishes, mostly in tropical and
subtropical seas,

^b
Attenes hians (Valenciennes)

Belone hians Valenciennes, Hist. Nat.
 Poiss., vol. 18, p. 432, ^{pl. 548,} 1846. (type
 locality: Havana; Bahia). — Günther,
 Cat. Fish. Brit. Mus., vol. 6, p. 248, 1866
 (copied); Journ. Mus. Godeffroy, vol.
 8, pt. 16, p. 353, fig. (head) 1909 (Bermuda,
 Muscat, Red Sea, Madras, Hawaiian
 Islands). — Weber, Siboga Exped., vol.
 57, Fische, p. 123, 1913 (Roo, Aru
 Islands).

171

Athlennes hians Jenkins, Bull. U.S.
Fish Comm., vol. 22, 1902, p. 433 (1903)
(Honolulu). — Snyder, Bull. U.S. Fish
Comm., vol. 22, 1902, p. 521 (1904) (Lahaina,
Maui). — Jordan and Evermann, Bull.
U.S. Fish Comm., vol. 23, pt. 1, 1903, p.
126, fig. 40 (1905) (Honolulu). —
Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7,
p. 332, 1911 (name). — Weber and Beaufort,
Fishes Indo-Austral. Archipel., vol. 4,
p. 131, fig. 49, 1922 (Pulu Wei; Vemarang;
Aru Islands).

Tylosurus hians (Gilchrist and
Thompson, Ann. South Afric. Mus.,
 vol. 6, p. 265, 1908-11 (Natal); Ann.
 Durban Mus., vol. 1, no. 4, p. 310, 1917
 (compiled).

Ablettes hians Jordan and Jordan, Mem.
 Carnegie Mus., vol. 10, p. 18, 1922 (reference).

— Fowler, Proc. Acad. Nat. Sci. Philadelphia,
 1925, p. 201 (Natal coast; Durban); 1927,
 p. 261 (Orion; Philippines). — Jordan,
Evermann, Tanaka, Proc. Cal. Acad. Sci.,
 ser. 4, vol. 16, p. 652, November 14, 1927
 (Honolulu). — Herre, Philippine Journ.

173

Sci., vol. 36, no. 2, p. 217, pl. 1, fig. 1,
June 1928 (Manila Bay). — Fowler,
Mem. Bishop Mus., vol. 10, p. 74, pl.
3E (Honolulu, Hawaii); vol. 11, no. 5,
p. 319, 1931 (Honolulu).

Belone crocodila (not Le Sueur) Bleeker,
Nat. en Geneesk. Arch. Ned. Indie,
vol. 2, pt. 3, p. 512, 1845 (Batavia).

Belone melanostigma (Ehrenberg) Valenciennes,
Hist. Nat. Poiss., vol. 18, p. 450, 1846 (type
locality: Red Sea). — Günther, Cat. Fish.
Brit. Mus., vol. 6, p. 241, 1866 (copied).

— Klunzinger, Verh. zool. bot. Ges. Wien,

174

vol. 21, p. 581, 1871 (Red Sea). — Day,
Fishes of India, pt. , p. 509, 18
(Bombay; India); Fauna British
Ind. Fishes, vol. 1, p. 418, 1889. —

Sauvage, Hist. nat. Madagascar, Poiss.,
p. 526, 1891 (name).

Tylosurus melanostigma Jordan and
Evermann, Proc. U. S. Nat. Mus., vol. 25,
p. 329, 1902 (Formosa). — Jordan
and Richardson, Mem. Carnegie Mus.,
vol. 4, p. 175, 1909 (copied).

Belone gracilis (not Lowe) Schlegel,
Fauna Japonica, Poiss., pt. 2, p. 246, pl.

110, fig. 1, 1843 (Japan). —

Bleeker, Verh. Batavia. Gen. (hal. Ich. Jap.), vol. 25, p. 18, 1853 (Aomura, Japan); (hal. Ich. Jap.), vol. 26, pp. 5, 116, 1857 (Nagasaki); Act. Soc. Ind. Neerl., vol. 3, no. 3, p. 6 1857-58 (Japan); vol. 5, no. 9, p. 3, 1858-59 (Nagasaki).

Mastacembelus gracilis Bleeker, Nederl. Tijds. Dierk., vol. 3, pp. 111, 230, 1866.

176

Belone schismatorhynchus Bleeker, Nat.
Tijds. Nederl. Indië, vol. 1, p. 95, 1850
(1851) (type locality: Batavia); Verh.
Batavia. Genoot. (Snoek. Vissch.), vol.
24, p. 15, 1852 (Batavia); Nat. Tijds.
Nederl. Indië, vol. 10, p. 362, 1856 (Ternate).
— Kner, Reise Novara, Fische, p. 322, 1865
(Java). — Günther, Cat. Fish. Brit. Mus.,
vol. 6, p. 239, 1866 (Red Sea). — Meyer,
Anal. Soc. Espan. Hist. Nat., Madrid,
vol. 14, p. 38, 1885 (Manila Bay). —
Elera, Cat. Fauna Filip., vol. 1, p. 573,
1895 (Luzon, Manila, Batangas, Masugbu).

— Ishikawa and Matsuura, Prelim.
Cat. Fish. Mus. Tokyo, p. 18, 1897.

Mastacembelus schismatorhynchus
Bleeker, Atlas Ichth. Ind. Néerl.,
vol. 6, p. 49, pl. () 268, fig. 2, 1866-72
(Java, Ternate, Japan).

Tylosurus schismatorhynchus Jordan
and Snyder, Annot. Zool. Jap., vol. ,
p. 61, 1901 (reference). — Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 26,
p. 528 (Nagasaki, Wakanoura). —

Jordan and Richardson, Mem. Carnegie
Mus., vol. 4, p. 175, 1909 (Takao, Formosa).

Tylosurus caeruleofasciatus Stead,
New Fisher New South Wales, No. 1,
p. 3, pl. 1, Sep. 1908 (type locality:
Port Stephens).

Aithennes caeruleofasciatus Ogilby, mem.
Queensland Mus., vol. 5, p. 130, pl. 14,
July 10, 1916 (Moreton Bay).

Depth $14\frac{1}{4}$ to $14\frac{4}{5}$, strongly compressed, deepest about anal origin; head $3\frac{1}{4}$ to $3\frac{7}{8}$, width $7\frac{1}{8}$ to $8\frac{1}{5}$. Snout $1\frac{1}{2}$ to $1\frac{3}{5}$ in head; eye $8\frac{4}{5}$ to $9\frac{1}{4}$, $6\frac{1}{5}$ to 7 in snout, 1 to $1\frac{1}{8}$ in interorbital; maxillary reaches eye, length to point in front $2\frac{3}{4}$ to $3\frac{1}{4}$ in head posteriorly; canines small, more or less inclined little backward; interorbital 9 to 10 in head from snout tip, with broad median depression.

Scales 445 to 470 in lateral axial series to caudal base; 350 to 360 predorsal forward to occiput; 25 above lateral line to dorsal origin; 14 or 15

on postocular to preopercle ridge.
Scales with 20 to 27 vertical
parallel striae each side of
median vertical line, none
continuous, at least in small
or young.

D. II, 22 or II, 23, first branched
ray $4\frac{4}{5}$ to 6 in head to snout
tip; A. II, 22 to II, 24, first
branched ray 4 to $4\frac{1}{5}$; least
depth of caudal peduncle $1\frac{2}{3}$
to $1\frac{3}{4}$ in eye; caudal $2\frac{4}{5}$ to
 $3\frac{2}{3}$ in head, well forked;
pectoral $3\frac{1}{5}$ to 4; ventral $4\frac{3}{4}$
to $4\frac{7}{8}$.

Back brown, sides and lower
surfaces bright silvery white.
Pale bluish band along edge of
dark color of back and in

181

band dozen or more dark or dusky blotches. Iris silvery white. Fins all more or less brownish, lobes of dorsal and anal, and pectoral ends, dusky to blackish.

Red Sea, Natal, India,
Philippines, Formosa, Japan,
Queensland, New South Wales,
Hawaii.

A 437. Manila market. March 12,
1908. Length 434 mm.

A 439. Manila market. March 13,
1908. Length 427 mm.

Genus Xenentodon Regan

Xenentodon Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 332, 1911. (Type

Belone cancila Buchanan-Hamilton, designated by Jordan, Genera of Fishes, pt. 4, p. 540, 1920.)

Body greatly elongated, cylindrical or subcylindrical. Caudal peduncle compressed, deeper than wide. Head long. Premaxillaries and mandible prolonged into beak. Each jaw with a band of fine small teeth and a row of canines. No teeth on palate. Gill openings wide. No gill rakers. Only third pair of upper pharyngeals denticulous, lower small, narrow and ends pointed or rounded. Scales small. Lateral line low, without keel on caudal peduncle. Dorsal and anal origins opposite. Caudal truncate or slightly rounded.

Fresh waters India, Ceylon, Burma, Malaya and the East Indies.

Analysis of species

a.' depth 8 to 12; Indian. cancila.

a.' depth 14 to 18; East Indian. canciloides.

184

✓ Xenentodon cancila (Buchanan-Hamilton)

Esch cancila Buchanan-Hamilton, Fishes
of Ganges, pp. 213, 380, pl. 27, fig. 70,

1822. (type locality: ponds and smaller
rivers of Gangetic provinces).

Belone cancila Valenciennes, Hist. nat.

Poiss., vol. 18, p. 455, 1846 (^{Madras, Rangoon} Aliphey, Bombay).

— McClelland, Calcutta Journ. nat. Hist.,
vol. 3, p. , 1842 (). —

Bleeker, Verhand. Batavia. Genoot. (hal.
Bengal. Hind.), vol. 25, pp. 14, 29, 72, 145,

1853 (compiled). — Mason, ~~Burmah~~

nat. Resources, p. 689, 1860. — Day,

Fishes of Malabar, p. 165, 1865; Proc.

Zool. Soc. London, 1865, p. 369

(Kurrivananoor). — Günther, Cat.

Fishes Brit. Mus., vol. 6, p. 253, 1866 (Ceylon).

~~Fishes of (compiled)~~

— Martens, Preuss. Exped. Ost Asien,
vol. 1, p. 400, 1876 (Manan Ariang,
Borneo). — Day, Fishes of India,
pt. 3, p. 511, pl. 118, fig. 5, 1877.

* Vinciguerra, Ann. Mus. Civ. Genova,
p. 659, 1882-83 (Feb. 3, 1883)
(Miri, Burma). — Day, Fauna
British India, Fishes, vol. 1, p.
420, fig. 169, 1889 (compiled).

Journ. & Linn. Soc. London, vol. 12, Zool.,
p. 571, 1876 (Beccan);

~~of L. royeri, Day~~ —

pt. 4, October 31, 1916, p. 193 (off New South
Wales).

Diphrutes macrolepidotus Cantor, Journ.
Asiat. Soc. Bengal (Cat. Malay. Fish.), vol.
18, part 1, 1849, p. 1141 (Pinang, Singapore,
Malay Peninsula).

Saurichthys macrolepidotus Bleeker, Atlas
Ichth. Ind. Neerl., vol. 9, 1878, p. 29 (Sumatra,
Pinang, Singapore, Java, Bali, Sumbawa, Solor,
Timor, Celebes, Ternate, Batjan, Buru, Obi
major, Amboina, Ceram, Banda, Ligon, New Guinea).

Saurichthys microlepidotus Bleeker, l.c.,
plate (5) 367, fig. 1.

Chaetodon bifasciatus Shaw, Gen. Zool., vol. 4,
1803, p. 342. Indian Seas.

Chaetodon mycterzanus Gray, Cat. Fish. Grouper,
vol. 2, 1854, p. 76. no locality (On Valentyn).

Heniochus intermedius Steindachner, Sitzb.

Abad. Wiss. Wien, band 102, heft 1, 1873, p. 222,
plate 2, fig. 2. Red Sea at Suez.

186

— Duncker, Mitteil. Naturh. Mus.

Hamburg, vol. 21, p. 169, 1903 (1904)
(Kuala Lumpur, Pahang River); vol.
29, p. 257, 1911 (compiled).

Mastacembelus cancila Bleeker, Nederl.
Tijds. Dierk., vol. 2, p. 35 (Siam),
p. 176 (Siam; copied), 1865.

Xenentodon cancila Regan, Ann. Mag.
Nat. Hist., ser. 8, vol. 7, p. 332, 1910
(name). — Fowler, Proc. Acad. Nat.
Sci. Philadelphia, p. 6, 1919 (Ganges
River, India).

Belone gracii Sykes, Trans. Zool. Soc.
London, vol. 2^d, p. 367, pl. 63, fig. 4, 1841
(type locality: Mota Mota River, Poona, Dukhim).
— Jerdon, Madras Journ. Liter. Sci.,
p. 345, 1849.

Belone grayi Bleeker, Verh. Batavia.
Genoot. (hal. Ich. Bengal. Hind.), vol.
25, p. 26, 1853 (copied).

? Esoy indica McClelland, Calcutta
Journ. Nat. Hist., vol. 2, p. ⁽⁵⁷³⁾582, 1842.
(type locality: Loodianah).
Bleeker, Verh. Batavia. Genoot.
(hal. Ich. Bengal. Hind.), vol. 25, p.
24, 1853 (copied).

Depth $13\frac{1}{3}$; head (beak ends broken) $2\frac{3}{4}$, width 8. Snout $1\frac{4}{5}$ in head, from end of frontal extension $3\frac{1}{5}$; eye 7 in head, 4 in snout, greater than interorbital; maxillary reaches $\frac{1}{8}$ in eye, length from frontal extension 5 in head; interorbital 8, level, with broad median concave groove. No gill rakers; gill filaments $2\frac{1}{3}$ in eye.

Scales all fallen and pockets largely obliterated. Predorsal pockets 130 to occiput.

D. II, 14, fin height 7 in total head length; A. II, 15, fin height $6\frac{1}{2}$; least depth of caudal peduncle $1\frac{1}{3}$ in eye;

c.¹ no black lateral blotch on body.

j.¹ Second dorsal spine not longer than others.

k.¹ no black spot on temple.

l.¹ snout moderate.

m.¹ no bluish streaks before eye.

n.¹ no oblique green bands on cheeks.

o.¹ Head not darker or greatly contrasted with body.

p.¹ ~~Each scale of body with white, golden or dark spot.~~ no longitudinal bands on body; anal longer than high; 5 scales above lateral line.

q.¹ Each scale of body with white, golden or dark spot.

r.¹ Depth $2\frac{1}{4}$ to $2\frac{2}{5}$. haematopterus.

r.² Depth $2\frac{3}{5}$. choerorhynchus.

r.³ Depth $2\frac{2}{3}$. mahsonoides.

q.² Each scale of back with black vertical basal streak; depth $2\frac{1}{2}$. chrysostomus.

3 names only

189

caudal broken off; pectoral
(damaged) about $\frac{1}{2}$ of postocular;
ventral nearly long as eye,
fin origin slightly nearer
vertical edge of preopercle
than caudal base.

Large dull ~~fish~~ brown
(stained greenish). Pale narrow
lateral axial streak, most
distinct between dorsal and
anal and width about $\frac{1}{4}$ of
eye.

India, Ceylon, Burma, Siam,
Borneo. My example in very poor
preservation after many years in
alcohol.

A. N. S. P., no. 7571. Ganges River,
India. Dr. Marmaduke Burroughs.
Length 138 mm. (caudal and heels broken).

24
behind gill opening to above hind
part of pectoral. hypselopterus:

h.² Black blotch behind pectoral end;
dark vertical bars variable, reticulate;
body rather slender. reticulatus.

h.³ Large black blotch at pectoral end. karab

h.⁴ Large black blotch above middle of
pectoral. atkinsoni.

h.⁵ Small black blotch before middle of
pectoral. frenatus.

g.² Usually more or less complete median
whitish axial line and several others ^{care}
above and below. kallopterus ^{name only}.

f.² Dark lateral blotch fading with age;
each scale with white spot. nebulosus.

e.² Dark vertical band on cheek; body rather
slender.

i.¹ Dark vertical band on cheek. variegatus.

i.² Broad dark vertical band on cheek,
another on preopercle. genivittatus.

170

Xenentodon canciloides (Bleeker)

Belone canciloides Bleeker, Naturk.

Tijds. Nederl. Indië, vol. 5, p. 454, 1853⁽⁴²⁹⁾
(type locality: Pontianak; Pangabolang,
Borneo); Akt. Soc. Sci. Ind. Nederl.,
no. 9, vol. 3, p. 7, 1857-58 (Palembang);
(Acht. Sumat.), vol. 8, p. 55¹⁸⁵⁹ (Telok-
betong, Pangabuang, Palembang);
(Sumatra), vol. 8, p. 2, 1860 (Lahat).

— Weber, Zool. Ergeb. Reise Ned. Ost.
Ind., vol. 3, p. 456, 1894 (Borneo;
Sumatra). — Volz, Zool. Jahrb., Syst.,
vol. 19, p. 393, 1903⁽¹⁹⁰⁴⁾ (Banabak);
Revue Suisse, Zool., vol. 12, p. 472, 1904
(^{Xungei Mahe; Djapura;}
^{Indragiri; Wampou}); Naturk. Tijds. Nederl.
Indië, vol. 66, p. 177, 1907 (Lampung,
Palembang, Indragiri, Batu Bahra,
Deli, Langkat).

— Elera, Cat. Fauna Filip., vol. 1, p. 573,
1895 (Samar, Borongan).

Mastacembelus cancelloides Bleeker,
Atlas Ichth. Ind. Néerl., vol. 6, p.
46, pl. 254 (), fig. 1 (Borneo;
Sumatra).

Xenentodon cancelloides Regan, Ann.
Mag. Nat. Hist., ser. 8, vol. 7, p. 332,
1911 (name). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol.
4, p. 133, fig. 50, fig. 51 (dentition)
(Taluk and Djambi, Sumatra; Putus
Sibau, Rann and Tepu, Borneo).

Belone cancila (not Buchanan-Hamilton)
Martens, Preuss. Exped. Ost Asien,
vol. 1, pp. 307, 400, 1876 (Danau
Sriang, interior of Borneo). —
Vaillant, Notes Leyden Mus., vol.
24, p. 31, 1902.

Depth $3\frac{4}{5}$ to 4; head $3\frac{1}{4}$ to $3\frac{1}{2}$, width $1\frac{7}{8}$ to 2. Snout $3\frac{4}{5}$ to 4 in head from snout tip; eye $3\frac{1}{4}$ to 4, greater than snout in young to subequal with age, greater than interorbital in young to $1\frac{1}{4}$ in interorbital with age; maxillary reaches $\frac{1}{4}$ in eye, length 3 to $3\frac{1}{8}$ in head from snout tip; teeth minute, weak; interorbital $3\frac{1}{2}$ to $3\frac{3}{5}$, slightly convex. Gill rakers $10 + 24$, lanceolate, slender, $1\frac{1}{5}$ in gill filaments or $\frac{1}{2}$ of eye.

Scales 61 to 63 in lateral line to caudal base and 3 or 4 more on latter; 7 scales above lateral line, $1\frac{1}{2}$ below, 26 to 28, ^{predorsal} forward opposite eye center, 4 or 5 rows on cheeks to preopercle ridge. Scales with 10 or 11 basal radiating

✓ Depth 14 to 18, cylindrical; head ^{8 1/2 to 9 in snout,} 2 1/3 to 2 2/5. Eye ^{8 1/2 to 9 in snout,} equals or little less than interorbital, 2 1/2 to 3 in postorbital; 2/3 of maxillary hidden by preorbital; canines short, subulate, vertical; tongue smooth; mandible depth below pupil less than half of eye; upper surface of head with very deep median groove, tapering anteriorly and continued as narrow groove on beak.

Scales 200 to 220 in median lateral series; 21 scales above lateral line to dorsal origin. Opercle not scaly.

D. II, 15, first branched ray 4 1/3 in total head length; A. II, 15, first branched ray 4 1/2; least depth of caudal peduncle nearly equals eye; caudal slightly rounded, 5/5 in total head length; pectoral 5 1/3; ventral 1 1/2 to 1 2/3 in pectoral, inserted midway between preopercle and caudal base.

192

Brownish, more or less silvery
below. Brownish lateral band,
broader and silvery on Tail. Fins
hyaline, caudal dusky. Ventrals
sometimes tipped with blackish.
Length 275 mm. (Weber and Beaufort.)

East Indies.

Insert 193

Belmonte

page 323

3 lines

Genus Belone Cuvier

Belone Cuvier, Règne Animal, vol.
 2, p. 185, 1817. (Type Esox belone
Linnaeus, monotypic.)

Belona Le Sueur, Journ. Acad. Nat.
 Sci. Philadelphia, vol. 2, pt. 1, p. 124,
 1821. (Type Esox belone Linnaeus.)

Acus P. L. S. Müller, Lin. Nat. Syst.,
 vol. 4, p. 341, 1774. Atypic. (Type
Esox belone Linnaeus.) L.c., Supplement,
 p. 7 in register, 1776. (Inadmissible.)

Mastacembelus (not Gronow 1763)
Klein, Neuer Schauplatz, vol. 3, p. 271,
 1776. (Type Esox belone Linnaeus,
 designated by Bleeker, Nederl. Tijds.
 Dierk., vol. 3, p. 214, 1866.) (Inadmissible.)

Raphistoma Rafinesque, Analyse
de la nature, p. 19, 1815. (Type
Esox belone Linnaeus, as Raphistoma
Rafinesque proposed to replace
"Belone Gronow", which name not
used by Gronow.)

Ramphistoma Swainson, Nat. Hist.
Animals, vol. 2, p. 296, 1839. (Type
Ramphistoma vulgaris Swainson =
Esox belone Linnaeus, monotypic.)

↑ Petalichthys Regan, Ann. Mag. Nat. By,
Hist., ser. 7, vol. 4, p. 129, 1904.
(Type Petalichthys capensis Regan,
~~monotypic~~.)

Platybelone Towler, Proc. Acad. Nat.
Sci. Philadelphia, 1919 (Jan.), p. 2.
(Type Belone platyura Bennett,
orthotypic.)

Tropidocaulus Ogilby, Proc. Roy. Soc.
Queensland, vol. 31, pt. 5, p. 45, Jan. 20,
1920. (Type Belone platyura Bennett,
to replace Eurycaulus Ogilby.)

194

Raphistoma Rafinesque, Analyse
de la nature, p. 19, 1815. (Type
Esop belone Linnaeus, as Raphistoma
Rafinesque proposed to replace
"Belone Gronow", which name not
used by Gronow.)

Ramphistoma Swainson, Nat. Hist.
Animals, vol. 2, p. 296, 1839. (Type
Ramphistoma vulgaris Swainson =
Esop belone Linnaeus, monotypic.)

Eurycaulus (not Fairmaire 1868) Ogilby,
Proc. Roy. Soc. Queensland, vol. 21,
p. 91, 1908. (Type Belone platyura
Bennett, orthotypic.)

Platybelone Fowler, Proc. Acad. Nat.
Sci. Philadelphia, 1919 (Jan.), p. 2.
(Type Belone platyura Bennett,
orthotypic.)

Tropidocaulus Ogilby, Proc. Roy. Soc.
Queensland, vol. 31, pt. 5, p. 45, Jan. 20,
1920. (Type Belone platyura Bennett,
to replace Eurycaulus Ogilby.)

195

Body greatly elongated, compressed to cylindrical. Caudal peduncle sometimes depressed. Head compressed, level above. Premaxillaries and mandible prolonged, forming long beak. Jaws with band of conical teeth and series of moderately large pointed wide set teeth, lower much smaller than upper, which canine like. Teeth present or absent from vomer. Gill openings wide. Gill rakers moderate, lanceolate. Scales rather small. Lateral line low, not forming keel along caudal peduncle, which sometimes with keel above lateral line. Dorsal and anal nearly opposite, front branched rays highest and all rays joined with membranes. Caudal forked. Paired fins short.

Species few, in tropical seas. Petalichthys Regan seems to differ in no way from Belone as here understood.

Analysis of species

- a.¹ Belone. Body compressed behind vent; without lateral keels.
- b.¹ Dorsal with 14 to 16 branched rays, anal 18 to 20. belone!
- b.² Dorsal with 12 branched rays, anal 13. capensis.
- a.² Platybelone. Body broadly depressed behind vent or at caudal peduncle; strong lateral keels present.
- c.¹ Dorsal with 11 or 12 branched rays, anal 15. platyura.
- c.² Dorsal with 15 or 16 branched rays, anal 22. natalensis.

Belone belone (Linnaeus)

Esox belone Linnaeus, Syst. Nat., ed. 12, pt. 1, p. 517, 1766 (type locality: European Ocean). — Walbaum, Artedi

Pisc., vol. 3, p. 87, 1792 (copied). — Lacépède, Hist. Nat. Poiss., vol. 5, pp. 295, 308, pl. 7, fig. 1, 1803 (all seas).

Belone belone Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 2 (Mediterranean).

Belone acus Risso, Hist. Nat. Eur. Mérid., vol. 3, p. 443, 1826 (type locality: Nice).

Belone vulgaris Fleming, British Animals, p. 184, 1829 (type locality: British Isles).

Belone rostrata Faber, Fische Island, p. 152, 1829 (type locality: Iceland).

Hemiramphus europaeus Garrell,
Mag. Nat. Hist., new ser., vol. 1, p.
505, fig. 63, 1837 (type locality:
Ipswich; young).

Belone gracilis Lowe, Proc. Zool. Soc.,
London, 1839, p. 86 (type locality:
Madeira).

Hemiramphus obtusus Couch, Zoologist,
1848, p. 1978, figs. a-c (type locality:
Mount's Bay).

Macrogathus scolopax Gray, Cat. Fishes
Grandw., p. 147, 1854 (type locality:
all seas of Europe).

Belone radiata Budge, Archiv.
Anat. Phys. Wiss. Medizin, Müller,
vol. 15, p. 383, pl. 12, figs. 9-10 (anatomy),
1848 (no locality).

Belone linnéi Malm, Göteborgs och
Bohusläns fauna, p. 553, 1877 (type
locality: Göteborg).

Strongylura koseirensis (Klunzinger)

Belone koseirensis Klunzinger, Verh.

zool. bot. Ges. Wien, vol. 21, p. 579,

1871 (type locality: ^{Koseir} Red Sea).

Petalichthys capensis (not Günther
1866) Regan, Ann. Mag. Nat. Hist.,
ser. 7, vol. 14, p. 129, 1904 (type locality:
Port Elizabeth); ser. 8, vol. 7, 1911, p.
332 (name). — Thompson, Marine

Biol. Rep. South Africa, no. 3, p. 91,
1916. — Norman, Ann. Mag. Nat.

Hist., ser. 9, vol. 11, p. 320, 1922
(Natal). — Barnard, Ann. South
African Mus., vol. 21, pt. 1, p. 255,
~~Ann. Mag. Nat.~~ fig. 15 b (dorsal view of head),
pl. 10, fig. 5, June 1925 (Table Bay,
False Bay, Natal coast).

Depth 16 to 18, $1\frac{1}{8}$ to $1\frac{1}{6}$ in postocular; head $3\frac{1}{8}$ to $3\frac{1}{2}$ in body without caudal, width $7\frac{1}{8}$ to $7\frac{1}{2}$. Snout $1\frac{1}{2}$ to $1\frac{3}{5}$ in head from snout tip; end of frontal extension or suture to eye $4\frac{1}{2}$ to $4\frac{3}{4}$ in rest of snout; eye 9 to $9\frac{1}{2}$ in head from snout tip, $5\frac{3}{4}$ to 6 in snout, greater than interorbital, $2\frac{1}{8}$ to $2\frac{1}{3}$ in postocular; maxillary reaches $\frac{1}{6}$ in eye, entirely concealed when closed; interorbital $2\frac{1}{5}$ to $2\frac{1}{2}$ in postocular, level, with broad shallow depression medially behind. Gill rakers 4 or 5 + 24

little forward, variable broken though some few more or less broken as spots. In small examples dark bands become little broader on caudal peduncle and base of caudal, also extends up on vertical dorsals and anals but curving forward. Soft vertical fins with deep blue border and submarginal blackish line, and in young against submarginal blackish line rather broad brownish band. Pectorals mostly pale or yellowish, occasionally variably dusky. Ventrals pale, tentaculally with dusky margin.

East Indies, Melanesia and Polynesia. Though Günther reports it from Hawaii through Garrett, likely this may have been the form later described by Jordan and Metz as Holacanthus potteri. We have, therefore, compared the type of Holacanthus potteri with this series of Philippine examples and find that it appears to differ chiefly in a slightly more barred color-pattern. In Holacanthus bispinosus the bands do not extend across the breast, head and predorsal region. Of this we are, however, not absolutely certain as the resulting color may in various degrees be ^{due to} the action of formaline. The type of Holacanthus potteri is very pale brown with dull cross bands or lines, only the soft vertical fins at all dark or dusky, the caudal all

to 26, lanceolate, $1\frac{1}{2}$ in gill filaments, which $\frac{1}{2}$ of eye.

Scales 200 to 270 in median lateral or axial series to caudal base; 120 to 153 predorsal scales to occiput, small and rounded on back. Smaller scales with 20 circuli, 10 or less in young; large lateral elongate scales with 30 to 50 close set circuli, becoming more or less incomplete with age.

D. II, 15 or II, 16, first branched ray $5\frac{3}{4}$ to 6 in total head length; A. II, 18 or II, 19, first branched ray $5\frac{1}{4}$ to $5\frac{1}{2}$; caudal $3\frac{1}{8}$ to $3\frac{1}{4}$, forked, little less forked in young;

Holacanthus potteri Jordan and Metz.

~~Holacanthus potteri Jordan and Metz.~~

~~Proc. U. S. Nat. Mus., vol. 42, 1912, p. 525,~~

~~plate 71, fig. 1. Honolulu. — Fowler, Bishop~~

~~Mus. Bull., no. 26, 1925, p. 28 (Honolulu).~~

~~— Fowler and Ball, Bishop Mus. Bull., no.~~

~~26, 1925 (1926), p. 18 (French Frigate~~

~~Shoals).~~

A very handsome species closely related to Holacanthus hispidus, differing only in the more distinct transverse dark bands and therefore more contrasted color pattern.

(Type.) 73911 U. S. N. M. Honolulu. F. A. Potter.

least depth of caudal peduncle $1\frac{1}{2}$ to $1\frac{3}{5}$ in eye; pectoral $4\frac{1}{5}$ to $4\frac{1}{3}$ in total head length; ventral $5\frac{1}{2}$ to 6, origin slightly nearer caudal base than pectoral origin.

Brown above, side with broad ill defined silvery band and below whitish. Sides of head and eyes silvery white. Fins pale or transparent, dorsal and caudal slightly dusted with brown.

Eastern Atlantic from Iceland, British Isles, Mediterranean, Madeira, South Africa to Natal.

778

showing no trace of darker bands. Now
in our small examples these dark
cross bands are very conspicuous on the
caudal of Holacanthus hispidus. There
are also traces of them in some of the
large examples. There are also traces,
in some specimens at least, of dark
or light transverse bands on the side
of the head, as in Holacanthus potteri,
though few if any across the predorsal
or breast. Also, in view of this, and
other examples of Holacanthus potteri
we have examined in all stages from
freshly caught specimens to those long
in alcohol that it is a very closely
allied species. The armature of the
preorbital and preopercle as extended
by Jordan and Jordan, are not valid
characters. Our series show them simply
as variants, evidently due to age or the
individuals. We can find nothing to
distinguish the nominal Centropyge
tutuilae.

I fail to distinguish Petalichthys
capensis Regan from the common
European gar fish Belone belone.
It is described with 22 lower
gill rakers and but 11 pectoral
rays. This latter character
recalls the imperfectly noticed
Belone 11 radiata Budge. It was
based apparently more on
anatomical details, chiefly dental
counts, rather than careful
comparison with Belone belone.

IN RE

CABLE ADDRESS "MUSEOLOGY NEW YORK"

THE AMERICAN MUSEUM OF NATURAL HISTORY

77TH STREET AND CENTRAL PARK WEST

NEW YORK CITY

DEPARTMENT OF HERPETOLOGY
AND EXPERIMENTAL BIOLOGY

G. KINGSLEY NOBLE, Ph.D., CURATOR
CLIFFORD H. POPE, B.A., ASSISTANT CURATOR
CHARLES E. BURT, M.S., ASSISTANT CURATOR
BERTRAM G. SMITH, Ph.D., RESEARCH ASSOCIATE
W. DOUGLAS BURDEN, A.M., RESEARCH ASSOCIATE
FRANK S. MATHEWS, M.D., RESEARCH ASSOCIATE
HOMER W. SMITH, Sc.D., RESEARCH ASSOCIATE
O. M. HELFF, Ph.D., RESEARCH ASSOCIATE

September 3, 1930

Director, Academy of Natural
Sciences of Philadelphia
Logan Square
Philadelphia, Pa.

Dear Sir

I wish to acknowledge with very many thanks the copy of
Cope's Contributions to the Herpetology of New Granada and Argentina.
We shall add it to our collection of vertebrate zoology papers recently
collected.

Very truly yours

G K Noble

GKN S

A. N. S. P., No. 7575. Mediterranean.
Dr. W. S. W. Ruschenberger. Length
375 mm.

A. N. S. P., Nos. 7576 to 7583.
Mediterranean. C. L. Bonaparte
(333). Dr. J. B. Wilson. Length
230 to 407 mm.

Depth $1\frac{1}{2}$ to $1\frac{4}{5}$; head $3\frac{1}{8}$ to $3\frac{2}{3}$, width $1\frac{1}{3}$ to $1\frac{2}{5}$. Snout $3\frac{1}{10}$ to $3\frac{1}{5}$; eye $2\frac{1}{2}$ to 3, greater than snout, 1 to $1\frac{1}{8}$ in inter-orbital; maxillary reaches opposite eye, $3\frac{1}{2}$ to $3\frac{3}{5}$ in head; interorbital $2\frac{4}{5}$ to $3\frac{1}{5}$, broadly convex; preopercle spine along upper edge $2\frac{4}{5}$ to 4; anterior preopercle spine below well advanced in young and close before large spine with age; preopercle serrae small in young, become variably larger with age. Gill rakers $5+16$, well compressed, elongately triangular, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales 36 to 40 counted between gill-opening and caudal base; 6 or 7 scales above lateral line, 17 or 18 below. Scales with 5 to 9 basal striae, marginal and edge scalloped; apical denticles 20 to 30, each with single long rootlet; circuli very fine.

D. XIII or XIV, 15, I to 17, I, last spine $1\frac{1}{3}$ to $1\frac{3}{5}$ in head, tenth ray $1\frac{1}{6}$ to $1\frac{1}{4}$; A. III, 16, I or 17, I, third spine $1\frac{1}{3}$ to $1\frac{2}{3}$, sixth ray $1\frac{1}{4}$ to $1\frac{1}{3}$; least depth of caudal peduncle 2 to $2\frac{1}{10}$; caudal rounded convexly behind, 1 to $1\frac{1}{8}$; pectoral 3 to $3\frac{2}{5}$ in combined head and body; ventral $2\frac{3}{5}$ to $3\frac{3}{8}$.

Back dark brown, also upper surface of head, becoming pale on sides and belly. Iris brown. About 17 to 20 dusky to blackish-brown transverse lines, inclined

Belone capensis (Günther)
Belone capensis Günther, Cat. Fish.

Brit. Mus., vol. 6, p. 247, 1866 (type
locality: Cape of Good Hope). —

~~Eilichrist, Marine Invest. South Africa,~~

~~154, 1910 (name).~~ Barnard,

Ann. South African Mus., vol. 21,
pt. 1, p. 255, June 1925 (copied).

Tylosurus capensis ~~Eilichrist and~~
Thompson, Marine Biol. Rep. South
Africa, no. 3, p. 94, 1916 (reference).

Body broad, subcylindrical, free portion of tail compressed, deeper than broad; head $2\frac{2}{5}$. Eye less than interorbital, 3 in postorbital; base of premaxillaries depressed and maxillary $\frac{2}{3}$ hidden by preorbital; teeth rather small, widely set, none on vomer; upper surface of head flat, with very shallow and broad median groove; superciliary region striated.

Scales of moderate size.

D. 14, middle and hinder rays subequal, short, last ending short distance from caudal base; A. 15, like dorsal, basal portion naked; caudal deeply emarginate; pectoral length more than ^{distance of} opercular margin from orbit; ventral rather small, nearly midway between eye and caudal. Length 330 mm. (Günther).

Cape Seas.

Belone platyura Bennett

✓ Belone platyura Bennett, Proc. Comm.

Zool. Soc. London, 1831, p. 168 (type locality:

Mauritius). — Jordan and Evermann, Bull.

U. S. Fish Comm., vol. 23, pt. 1, p. 122, fig. 38, 1903

(1905) (Honolulu, Kailua, Samoa). — Jordan

and Seale, Bull. Bur. Fisher., vol. 25, p. 206,

1905 (1906) (Apia). — Kendall and

Goldsborough, Mem. Mus. Comp. Zool.,

vol. 26, p. 250, 1911 (Kambara, Fiji;

Funafuti). — Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1919, p. 2 (Hawaiian Islands).

— Rendahl, Nat. Hist. Juan Fernandez,

10

208

Skottsberg, vol. 3, Zool. pt. 1, p. 66, 1921
(Easter Island). — Fowler, Copeia, no.
122, p. 82, nov. 20, 1922 (Hawaii); Bull.
Bishop Mus. 22, p. 6, 1925 (Guam);
26, p. 7, 1925 (Laysan, Lisiansky, Ocean
Islands); 38, p. 7, 1927 (Christmas, Blake
Islands, Honolulu); Mem. Bishop Mus.,
vol. 10, p. 71, 1928 (Honolulu, Faté, Rarotonga,
Laysan, Palmyra, Funafuti, Society
Islands, Lipia, Kambara, Hawaii); vol.
11, no. 5, p. 319, 1931 (compiled); Proc. U. S.
Nat. Mus., vol. 81, art. 8, p. 3, 1932
(Niuafoou Island, Tonga Group).

Belone (Eurycaulus) platyura Weber
and Beaufort, Fishes Indo Austral.
Archipelago, vol. 4, p. 118, 1922 (compiled).
Belone platura Rüppell, Neue Wirbelth.
Fische, p. 73, pl. 20, fig. 1, 1835 (Massana).
— Valenciennes, Hist. nat. Poiss., vol. 18, p.
⁴⁵¹
~~437~~, 1846 (copied). — Bleeker,
Act. Soc. Sci. Ind. Néerl., vol. 2, no. 7, p. (7)
85, 1857 (Amboina). — Günther, Cat. Fish.
Brit. Mus., vol. 6, p. 237, 1866 (Red Sea;
Amboina). — Klunzinger, Verh. zool. bot.
Ges. Wien, vol. 21, p. 577, 1871 (Red Sea).
— Streets, Bull. U. S. Nat. Mus., no. 7, p. 75,

1877 (Honolulu). — Sauvage, Hist.
Nat. Madagascar, Poiss., p. 526, 1891
(reference). — Waite, Mem. Austral.
Mus., no. 3, p. 194, 1897 (Funafuti). —
Pellegrin, Bull. Mus. Hist. Nat. Paris,
vol. 4, 1898, p. 228 (Guam). —
Steindachner, Denks. Akad. Wiss. Wien,
math.-nat. Kl., vol. 70, p. 512, 1901 (Laysan).
— Snyder, Bull. U.S. Fish Comm., vol.
22, p. 521, 1902 (1904) (Honolulu). —
Seale, Occas. Pap. Bishop Mus., vol. 1,
no. 15, p. 21, 1902 (Honolulu); vol. 4, no. 1,
p. 12, 1906 (Fate, New Hebrides). —

211

Jordan and Seale, Bull. Bur. Fisher.,
vol. 25, p. 206, 1905 (1906) ().

— Günther, Journ. Mus. Godeffroy,
vol. 8, pt. 16, p. 349, fig. (head), 1909
(Red Sea, East Indies, Pelau, Hawaii).

— Regan, Ann. Mag. Nat. Hist., ser. 8,
vol. 7, p. 332, 1911 (name).

Belone platurus Bleeker, Naturk. Tijds.
Ned. Indie, vol. 22, p. 101, 1860 (Singapore).

Mastacembelus platurus Bleeker, Atlas
Ichth. Ind. Néerl., vol. 6, p. 50, pl. (11)
257, fig. 1, 1866 (Singapore; Amboina).

Hemiramphus platurus Seale, Occas.
Pap. Bishop Mus., vol. 4, no. 1, p. 13, 1906
(Rarotonga, Cook Islands).

Belone platyurus Jenkins, Bull. U.S.
Fish Comm., vol. 22, p. 433, 1902 (1903)
(Honolulu).

Isop bellone (not Linnaeus) Lichtenstein,
Descript. Animal., Forster, p. 257, 1844
(Tanna).

Belone carinata Valenciennes, Hist. Nat.
Poiss., vol. 18, p. 437, 1846 (type locality:
Guayaquil to Hawaiian Islands). —

Günther, Cat. Fish. Brit. Mus., vol. 6,

1877 (Honolulu). — Sauvage, Hist. nat.

Madagascar, Poiss., p. 526, 1891 (reference).

— Waite, Mem. Austral. Mus., no. 3, p. 194, 1897 (Funafuti).

— Steindachner, Denks. Akad. Wiss.

Wien, vol. 70, p. 512, 1900 (Laysan). —

Snyder, Bull. U. S. Fish Comm., vol. 22,

¹⁹⁰²
p. 521, (Honolulu). — Seale, Occas. Pap.

Bishop Mus., vol. 1, no. 15, p. 21, 1902

(Honolulu). — Jordan and Seale, Bull. Bur.

Fish., vol. 25, p. 206, 1905 (). —

Günther, Journ. Mus. Godeffroy, vol. 8, pt.

16, p. 349, fig. (head), 1909 (Red Sea, East

Indies, Palau, Hawaii). — Regan, Ann.

Mag. nat. Hist., ser. 8, vol. 7, p. 332, 1911 (name).

p. 236, 1866 (copied). — Schmeltz, Cat.

Mus. Godeffroy, no. 3, p. 11, 1866

(Pacific Ocean); no. 4, p. 25, 1869

(Pacific Ocean).

✓ Belone depressa (not Poey) Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 235, 1866
(North West Australia; part). —
Macleay, Proc. Linn. Soc. New South
Wales, ser. 2, vol. 5, p. 174, 1881 (on
Günther). — Saville-Kent, Great Barrier
Reef, pp. 299, 370, 1893 (Moreton Bay).

Tylosurus depressus McCulloch, Austr.
Mus. Mem., vol. 5, pt. 1, p. 100, June 29,
1929 (Queensland?; North West Australia).

been known to pierce the naked
abdomens of savages. Many are
well flavored food fishes, though
largely on account of their greenish
colored bones are cast aside.

Belone persimilis Günther, Journ. Mus. ²¹⁴

Godeffroy, vol. 16, pt. 8, p. 349, fig.

(head)_{3, 1}¹⁹⁰¹ (type locality: Hawaii; Tonga; Yap; North-west Australia).

Belone (Eurycaulus) persimilis Weber
and Beaufort, Fishes Indo Austral.

Archipelago, vol. 4, p. 118, fig. 46, 1922
(Flores).

Platybelone dorsalis Whitley, Rec. Austral. Mus.,
vol. 18, no. 6, p. 335, April 26, 1932 (type locality:
North-west Australia: on Günther).

trasted and giving variegated appearance,
pecially on left side of fish. Iris
er gray. Fins pale, dorsal and
dal little more brownish.

A. N. S. P. no. 54914, Type. Umsinduzi

January 20, 1932.

ier,
lection Mr. L. A. Day. Length 150 mm.
Diagnosis. Related to Barbus robinsoni

215

Depth 18 to $19\frac{4}{5}$, body rather broad, cylindrical, more depressed behind or on caudal peduncle so width greater than depth behind dorsal origin; head from snout tip $2\frac{5}{6}$ to $2\frac{9}{10}$, width $6\frac{1}{4}$ to 7. End of frontal point to eye $4\frac{1}{2}$ to 5 in rest of snout, wide as long; eye $1\frac{3}{4}$ to $1\frac{7}{8}$ in postocular; maxillary reaches front eye edge; interorbital $1\frac{3}{4}$ to 2 in postocular, level, broad shallow depression medially; bones on top of head rather obscurely striate. Gill rakers IV or V, 3 + 6, XII or 5, X, short points, $2\frac{1}{2}$ in gill filaments, which $\frac{1}{3}$ of eye.

Scales 175⁺? to 196 in median axial lateral series to caudal base;

the prolonged last-dorsal ray has been broken and possibly the filament to the upper caudal lobe may also have been present as in my material. Bleeker's Pristipomoides typus is a synonym, likewise his Dentex pristipoma and Mesoprion dentex. Mesoprion multidens Day is another synonym:

predorsal 95 to 103 forward to head; 9 rows on cheek. Scales with 34 to 54 close set circuli, complete (likely incomplete with age).

D. IV, 11 to IV, 13, first branched ray $5\frac{4}{5}$ to 6 in head from snout tip; A. II, 15 to II, 17, first branched ray $5\frac{1}{4}$ to $5\frac{2}{5}$; least depth of caudal peduncle $\frac{1}{2}$ its width or $2\frac{3}{4}$ to $3\frac{1}{5}$ in eye; pectoral $4\frac{1}{2}$ to 5 in head from snout tip; ventral 7 to $7\frac{3}{4}$, $1\frac{1}{4}$ to $1\frac{2}{5}$ in postocular.

Brownish to gray or olive above or on back, sides and under surfaces. Iris white. Fins pale, darker terminally.

first ray 3 to $3\frac{1}{3}$, last ray 2 to $2\frac{1}{4}$, over twice length of penultimate ray; caudal $1\frac{1}{8}$ with age, $2\frac{1}{8}$ to $2\frac{2}{5}$ in combined head and body in young, deeply forked; least depth of caudal peduncle 3 to $3\frac{1}{8}$ in total head length; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{1}{3}$ to $1\frac{2}{5}$.

Largely pale brown to scarcely paler below. Under surfaces often glossed silvery white. Iris yellowish white to light brown. Fins all dull or pale brownish.

Mauritius, Andamans, Singapore, East Indies, Formosa, China, Japan. Xoranus argyrogrammicus Valenciennes, as figured by Sauvage, seems to be the earliest notice of this species. Jordan and Evermann's figure of Platyinius sparus surely is the same as my Sumatra examples. Evidently

Red Sea, Mauritius, Malaya,
East Indies, Philippines, North
West Australia, Queensland,
Melanesia, Micronesia, Polynesia,
Hawaii, Easter Island.

Whitley has named Günther's
North-west Australian specimen
Platybelone dorsalis, chiefly on the
distinction of but 16 dorsal rays.
If allowance is made for the first
2 rays as simple or unbranched,
the formula would be $D. \overline{II}, 14$. As
this is only one ray more than I have
found in my materials I can hardly
believe it of specific importance.

~~I have placed the reference of Belone
depressa of Günther~~

Strongylura impotens (Ogilby)

Tylosurus impotens Ogilby, Proc. Roy.
Soc. Queensland, vol. 21, p. 89, 1914.

One example. Anchorage,
Joumindao Island. February 25,
1908. Length 47 mm (broken).

One example. Shore above Iloilo
River. June 2, 1908. Length 80 mm.

U.S.N.M. no. 17983. Honolulu.

Dr. J. H. Street. Length 380 to 402
mm. Three examples.

Two examples. Sandakan, Borneo.
February 29, 1908. Length 43 to 44 mm.
Two examples.

Three examples. Sandakan, Borneo.
March 1, 1908. Length 47 to 50 mm.
Three examples.

U.S.N.M. no. 51063. Hawaiian Islands.
Bureau of Fisheries (04993). Length
333 mm.

U.S.N.M. no. 52527. Apia, Samoa.
Bureau of Fisheries (025471). Length 326
mm.

eye; preopercle edge minutely serrate, serrae little enlarged around angle. Gill rakers 7 or 8 + 15 or 16, lanceolate, slightly longer than gill filaments in young to $1\frac{1}{8}$ in gill filaments with age or $1\frac{7}{8}$ in eye.

Scales 47 to 57 in lateral line to caudal base and 4 to 6 more on latter; 7 scales above lateral line, 14 or 15 below, 13 to 17 predorsal, 7 rows on cheek. Suprascapula denticulate, or rough with age. Scales with 9 or 10 basal radiating striae; apical denticles 44 to 90, small, weak points, with 3 to 8 transverse series of basal elements; circuli very fine or minute.

D. X, 11, I, spines rather flexible, fourth $2\frac{1}{4}$ to $2\frac{2}{5}$ in total head length, first ray $2\frac{7}{8}$ to 3, last ray $1\frac{7}{8}$ to 2; A. III, 8, I, third spine $3\frac{1}{2}$ to $4\frac{1}{8}$,

U. S. N. M. No. 52699. Hawaiian
Islands. Bureau of Fisheries
(04994). Length 376 mm. As
Tylosurus giganteus.

~~U. S. N. M. No. 52699. Hawaiian
Islands~~

U. S. N. M. No. 65763. Kambara,
Fiji. Albatross Collection (A136).
Length 313 to 384 mm. Three
examples.

U. S. N. M. No. 92251. Hawaiian
Islands. July 1930.
Length 464 mm.

A. N. S. P. Nos. 7573 and 7574.
Hawaiian Islands. Dr. J. K. Townsend.
Length 400 to 439 mm. These two examples
among the first of the species obtained
in the Hawaiian Islands, several years
before Valenciennes described it as
Belone carinata.

817

Anthias multidentatus Day, Fishes of India, pt. 1, 1875, p. 27, pl. 7, fig. 4.

Depth 3 to $3\frac{2}{5}$; head $2\frac{5}{6}$ to $3\frac{1}{5}$, width $1\frac{7}{8}$ to $2\frac{2}{5}$. Snout 3 to $3\frac{1}{5}$ in head from snout tip; eye $3\frac{1}{3}$ to $4\frac{1}{5}$, $1\frac{1}{10}$ to $1\frac{2}{5}$ in snout, little greater than interorbital in young to $1\frac{1}{2}$ with age; maxillary reaches $\frac{1}{6}$ to $\frac{2}{5}$ in eye, expansion $2\frac{1}{5}$ to $2\frac{2}{5}$ in eye, length $2\frac{2}{5}$ to $2\frac{2}{3}$ in head from snout tip; teeth fine, villiform, in narrow bands in jaws in 4 or 5 irregular series and outer enlarged row; young with distinct pair of wide set canines in front of each jaw; triangular band of villiform teeth on vomer and band on each palatine, but tongue edentulous; interorbital 3 to 4, broadly convex, often flattened medially; infraorbital width at maxillary end 2 to $2\frac{1}{8}$ in

221

Belone natalensis Günther

Belone natalensis Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 243, 1866 (Type
locality: Port Natal). — Sauvage,

Hist. nat. Madagascar, Poiss., p. 526,
1891 (reference). — Gilchrist, Marine

Investig. South Africa, p. 152, 1901
(reference). — Barnard, Ann. South
African Mus., vol. 21, pt. 1, p. 254, June
1925 (Natal).

Tylosurus natalensis Gilchrist and
Thompson, Ann. Durban Mus., vol. 1, pt.
4, p. 310, 1917 (compiled).

Body compressed, depth less than pectoral fin; free portion of tail not compressed, subtriangular, back of tail broad and depressed; head nearly 3. Eye less than interorbital, $2\frac{2}{3}$ in postorbital; base of premaxillaries depressed and maxillaries $\frac{2}{3}$ hidden by preorbital; teeth moderate, none on vomer or tongue; upper surface of head with wide, shallow median groove, tapering behind, widening in front; superciliary region faintly striated.

Scales thin, rather small, adherent. D. 17 or 18, middle and hinder rays subequal, short, last ending at considerable distance from caudal base; A. 24, like dorsal; caudal truncate; pectoral greater than distance of opercular margin from orbit; ventral nearly midway between caudal base and front eye edge. Length 512 mm. (Günther.)

Natal coast.

223

Family Scomberesocidae

Body elongate compressed. Head with both jaws more or less prolonged, forming slender beak, upper jaw always longer. Eye nearly median, high. Teeth weak, pointed. Maxillary and premaxillary firmly joined. Gill rakers slender, numerous, long. Pharyngeal bones with fourth upper on each side absent or fused with third, which greatly enlarged, distinct from its fellow and covered with tricuspid teeth; second with simple teeth; first toothless;

lower ones united, form triangular bone with concave surface, covered with tricuspid teeth. Scales very small, thin deciduous, with suggestion of mackerel. Dorsal and anal low, alike, each followed by 4 to 6 detached finlets. Paired fins small.

A small group of pelagic fishes, usually found in large schools. swimming near or at the surface in temperate seas.

Analysis of Genera

- a.¹ Beak short, upper jaw of adult not extended and lower jaw with only short, flexible tip. Cololabis.
- a.² Beak long, both jaws extended and slender. Scomberesox.

225

Genus Cololabis Gill

Cololabis Gill, Proc. U. S. Nat. Mus.,
vol. 18, p. 176, 1895. (Type, Scombreox
brevirostris Peters, orthotypic.)

Jaws extended into a short beak,
only half length of rest of head.

Greatly like Scombreox and
differing only in the short beak.

Cololabis saira (Brevoort)

Scomberesox saira Brevoort, Narrat. Exped. China Japan, Perry, p. 281, pl. 7, fig. 4, 1856 (type locality: Simoda, Japan).

Scomberesox saira Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, p. 18, 1897 (reference).

Cololabis saira Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 60, 1901 (reference). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 26, p. 537, 1903 (Awa, Otaru, Aomori, Hakodate).

— Tanaka, Fig. descr. Fishes Japan, vol. 5-10, p. , pl. 12, 1912.

Matsuura, Cat. Zool. Spec. Mus. Tokyo, Vertebr., p. 165, 1920 (Tokyo). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., p. 36, 1931 (Nagasaki). — Anonymous, Ill. Jap. Aquat. Plants Anim., vol. 1, pl. 21, fig. 2, 1931.

Cololabis saira (Brevoort)

Scomberesox saira Brevoort, Narrat. Exped. China Japan, Perry, p. 281, pl. 7, fig. 4, 1856 (type locality: Simoda, Japan).

Scomberesox saira Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, p. 18, 1897 (reference).

Cololabis saira Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 60, 1901 (reference). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 26, p. 537, 1903 (Awa, Otaru, Aomori, Hakodate).

— Franz, Abhandl. Akad. ^{wiss.} München, vol. 4, Suppl. band 1, p. 24, 1911 (Yokohama, Aburatsubo, Todohokkei). — Izuka and Matsuura, Cat. Zool. Spec. Mus. Tokyo, Vertebr., p. 165, 1920 (Tokyo). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., p. 36, 1931 (Nagasaki). — Anonymous, Ill. Jap. Aquat. Plants Anim., vol. 1, pl. 21, fig. 2, 1931.

to
Faintly
supple
Mammals
Mammals
vertebrates

Paired fins black. ♂

(mamm)

227

Scombrex brevirostris Peters, Monatsb.
Akad. Wiss. Berlin, 1866, p. 521
(type locality: Tomales Bay, California).

Cololabis brevirostris Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 726,
1896 (California). — Fowler, Proc. Acad.
Nat. Sci. Philadelphia, vol. 75, 1923,
p. 287 (Venice, California), p. 296 (La Jolla,
California).

Scombrex saurus (not Walbaum) Hystrom,
Bih. Svensk. Vet. Akad. Handlingar,
Stockholm, vol. 13, no. 4, p. 41, 1887
(Nagasaki).

228

Depth $7\frac{1}{2}$ to 9; head $4\frac{1}{10}$ to $4\frac{2}{5}$, width $3\frac{2}{3}$ to 4. Snout $2\frac{2}{3}$ to 3 in head from snout tip; eye $5\frac{3}{4}$ to 7, 2 to $2\frac{3}{4}$ in snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary reaches $1\frac{1}{2}$ to eye, length $3\frac{2}{3}$ to $4\frac{1}{8}$ in head from snout tip; lower jaw extends but very slightly forward of upper jaw, length to eye $2\frac{1}{2}$ to $2\frac{3}{5}$ in total head; interorbital $5\frac{1}{4}$ to $6\frac{1}{2}$ in head, moderately high, depressed medially. Gill rakers $8 + 40$, upper and lowest 2 rudimentary, others lanceolate and $1\frac{1}{5}$ in eye.

Scales 100 to 109 in median lateral series axially to caudal base; 15 or 16 above lateral line to dorsal origin, 98 to 100 predorsal of which 76 to 78

654

Depth $1\frac{1}{3}$ to $1\frac{3}{5}$; head 3 to $3\frac{1}{4}$, width 2 to $2\frac{1}{5}$.
Snout $2\frac{2}{5}$ to $2\frac{1}{2}$ in head; eye $3\frac{1}{3}$ to 4, $1\frac{2}{5}$ to $1\frac{3}{4}$ in snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary $\frac{2}{3}$ to $\frac{3}{4}$ in snout, 4 to 5 in head; interorbital $3\frac{1}{2}$ to $3\frac{3}{4}$, broadly convex; above each eye a strong, short, horny spine, less than pupil and little developed in smaller examples; with age obtuse, short bony tubercle at predorsal. Gill rakers 2 + 10, short points, about 10 of gill filaments, which equal eye.

Tuber 55 or 56 in lateral line to caudal base; 12 to 14 scales above lateral line, 28 or 29 below. Scales with 10 to 12 basal radiating striae, and 0 to 6 in complete auxiliaries; apical denticles 80 to 145 with 13 to 22 transverse series of basal elements; 'circuli' fine.

D. XII, 27, I or 28, I, fourth spine $1\frac{2}{3}$ to $2\frac{1}{8}$ in combined head and body, sixth ray

forward from dorsal to occiput
or opposite hind preopercle
edge. Scales caducous, often
largely fallen in preserved
examples. Scales with 0 to 1
basal radiating stria; circuli
fine 70 to 75, incomplete
apically.

D. II, 9 or II, 10 - 5 or 6, first
branched ray $3\frac{7}{8}$ to $4\frac{3}{4}$ in total
head length; A. II, 11 or 12 - 6,
first branched ray $4\frac{3}{4}$ to $5\frac{2}{5}$;
caudal $1\frac{3}{4}$ to $2\frac{1}{4}$; least depth
of caudal peduncle $8\frac{2}{5}$ to 9;
pectoral $2\frac{2}{5}$ to $2\frac{5}{8}$; ventral
 $3\frac{1}{5}$ to $3\frac{1}{4}$.

Back brown, sides and
below silvery white, line of
demarcation high on side.

Genus Holacanthus Lacépède.

Holacanthus Lacépède, Hist. Nat. Poiss.,

vol. 4, 1803, p. 525. Type Chaetodon

tricolor Bloch, designated by Bleeker,
Arch. Neerl. Sci. Nat., vol. 12, 1876, p. 307.

Genicanthus Swainson, Nat. Hist. Animals,

vol. 2, 1839, p. 212. Type Holacanthus

lamarch Lacépède, designated by Swain,

Proc. Acad. Nat. Sci. Phila., 1882, p. 273.

Centropyge Kaup, Ich. Naturg., band 26,

1856, p. 138. Type Holacanthus tibicen

Cuvier, monotypic.

Chaetodontoplus Bleeker, l.c. Type

Holacanthus septentrionalis Schlegel,

orthotypic.

Acanthochaetodon Bleeker, l.c., p. 308.

Type Holacanthus annularis Lacépède,

orthotypic.

Angelichthys Jordan and Evermann, Rep. U.S. Fish
Comm., pt. 21, 1895 (1896), p. 420. Type Chaetodon
ciliaris Linnaeus, orthotypic.

Iris silvery white. Dorsal and caudal pale brown, other fins still paler.

Japan, California. A comparison with the California example listed below fails to show any differences.

671

32697 U.S.N.M. Indian Archipelago.
Leiden Museum. Length 168 mm.

43939 U.S.N.M. Mauritius.
Colonel Nicholas Pike. Length 125 to 243
mm. 4 examples.

51088 U.S.N.M. Hawaii. Bureau of
Fisheries. Length 170 mm.

52471 U.S.N.M. Samoa. Bureau of
Fisheries. Length 138 mm.

52798 U.S.N.M. Hawaii. Bureau of
Fisheries. Length 163 mm.

55027 U.S.N.M. Honolulu. Albatross
Collection. Length 150 to 163 mm. 2 examples.

55961 U.S.N.M. Bacm, Philippines.
Bureau of Fisheries. Length 108 mm.

55976 U.S.N.M. San Fabian. Bureau
of Fisheries. Length 52 mm.

71692 U.S.N.M. Lafa, Marianas.
Albatross Collection 1906. Length 62 to 70 mm.
2 examples.

82779 U.S.N.M. Fiji. Wilkes Exploring Expedition. Length 38 to 50 mm.
2 examples

231
U. S. N. M., no. 27209. California.
O. S. Jordan. Length 350? mm
(caudal broken). As Scombrex
brevirostris.

U. S. N. M., no. 44926. Japan.
Government of Japan. Length
298 to 320 mm. 3 examples.

U. S. N. M., no. 50744. Otaru,
Hokkaido. O. S. Jordan and J. O.
Snyder. Length 114 to 135 mm.
8 examples.

spines to and including ventrals;
 black band after fourth dorsal spine
 to eleventh, obliquely back and downward
 and including posterior half of anal.
 Anal with spines and edge black.
 Tips of last 4 dorsal spines, all of
 soft dorsal, caudal and pectoral
 lemon yellow. Truncated dorsal spine
 pure white with front edge dusky,
 white extending below and including
 anal. Breast and head silvery.

2029 (D. 5147)

February 16, 1908. Length 42 mm.

A 930. Rodepo and Pusejogo Islands, Dutch
 East Indies. November 16, 1909. Length 168
 mm. Bands alternately white and brown,
 central white band continued through extended
 dorsal ray. Ends of dorsal, caudal and
 pectoral lemon yellow.

432

Genus Scomberesox Lacépède

Scomberesox Lacépède, Hist. nat. Poiss.,
vol. 5, p. 344, 1803. (Type Scomberesox
camperi Lacépède, monotypic.)

Scomberesox Duméril, Zool. Anal.,
p. (148) 342, 1806. (Type Scomberesox
camperi Lacépède.)

Sayris Rafinesque, Carrat. Animal.
Sicil., p. 60, 1810. (Type Sayris
recurvirostra Rafinesque = Eox saurus
Walbaum, designated by Jordan and
Evermann, Genera of Fishes, pt. 1, p. 81, 1917.)

Grammiconotus Costa, Annuario Mus.
Zool. Napoli, ^{vol. 1} p. 55, 1862. (Type
Grammiconotus bicolor Costa, monotypic.)

Body long. Both jaws extended into very slender pointed beak, in adult longer than rest of head. Young with short jaws, lengthen into beak with age. Air bladder large.

Species few.

4808 to 4810, 19970, 19971. Polloc,
Mindanao. May 22, 1908. Length 75 to
92 mm.

358. Port Calton. December 15, 1908.
Length 95 mm.

10300, 10338, 10339, ^{11025,} 22742. Port Maricaban.
July 21, 1908. Length 65 to 79 mm.

16535. Port Matalvi, Luzon. November
22, 1908. Length 82 mm.

4602. Port Palapag. June 3, 1909.
Length 102 mm.

12657 and 12658. Port San Pio Quinto,
Carriguin Island. November 10, 1908.
Length 93 to 105 mm.

751. Port Usan, West Pinan Island.
December 17, 1908. Length 77 mm.

634. Port Tilig. July 15, 1908. Length
76 mm.

20927. Puerta Princesa, Palawan Island.
April 5, 1909. Length 89 mm.

234

Scomberesox forsteri (Valenciennes)

Scomberesox forsteri Valenciennes, Hist.
Nat. Poiss., vol. 18, p. 481, 1846 (type
locality: New Zealand). — Günther,

Cat. Fishes Brit. Mus., vol. 6, p. 258,
1866 (New Zealand). — Hutton, Fishes
New Zealand, p. 53, 1877. — Castelnau,

Rec. London Intern. Exhib., pt. 7, no. 5, 1873,
p. 16 (Victoria). — Macleay, Proc. Linn.
Soc. New South Wales, vol. 5, pt. 2, p. 180,
1881 (Melbourne and Sydney). —

Ogilby, Handbook of Sydney, p. 124, 1898. —
Jordan and Snyder, Annot. Zool. Japon.,
vol. 3, p. 61, 1901 (reference). — Stead,
Fishes of Australia, p. 64, 1906. —
McCulloch, Biol. Res. Endeavour,
p. 30, 1909-10 (120 miles south west of
St. Francis Island, South Australia).

Scomberesox forsteri McCulloch,
Austral. Mus. Mem., No. 5, pt. 1, p. 99,
June 29, 1929 (New South Wales, Victoria,
South Australia, Tasmania, New Zealand).

Esox saurus (not Walbaum) Lichtenstein,
Descript. Animal., p. 143, 1844.

Depth $9\frac{1}{4}$; head $3\frac{1}{3}$, width $5\frac{1}{2}$. Snout $1\frac{2}{3}$ in head from snout tip; eye $9\frac{4}{5}$, 6 in snout, $1\frac{1}{3}$ in interorbital; beaks not completely closing basally, lower jaw little longer; maxillary reaches $7\frac{1}{8}$ in snout, length from snout tip $1\frac{7}{8}$ in head from snout tip; interorbital $8\frac{1}{5}$, low, broadly convex. Gill rakers $6 + 40$, upper or ceratobranchial rudimentary, others lanceolate or $1\frac{3}{4}$ in eye.

Scales 90? (pockets) in median lateral or axial series; 14? above lateral line to dorsal origin, 104 predorsal of which 76 forward opposite upper hind preopercle edge. Scales all fallen.

D. II, 8-5, first branched ray $6\frac{1}{8}$ in total head length;

705
31 and 3922. Malapascua Island.
March 16, 1909. Length 100 to 105 mm.

997. Maricaban Island. January 20,
1908. Length 92 mm.

9317. Mompog Island, Anabayan Island.
March 2, 1909. Length 71 mm.

4567. Mompog Island. March 3, 1909.
Length 78 mm.

1100, 1229 to 1231, 21966. Murciélagos Bay,
Mindanao. August 7, 1909. Length 60 to 80 mm.

4859 and 4860. Murciélagos Bay.
August 21, 1909. Length 78 to 89 mm.

3609 and 15251. Near Palag Bay, Luzon.
June 16, 1909. Length 70 to 76 mm.

3905, 22794, 22795. Opol, Mindanao Island.
August 4, 1909. Length 66 to 72 mm.

897. Pagapas Bay. February 20, 1909. Length 65 mm.

276, 277, 19070. Paluan Bay, Mindoro.
December 11, 1908. Length 72 to 87 mm.

15950. Pangasinan Island. February 13,
1908. Length 67 mm.

237

A. II, 10 - 6, first branched ray
7; caudal $2\frac{1}{2}$; least depth of
caudal peduncle $1\frac{5}{8}$; pectoral
 $4\frac{1}{2}$; ventral $5\frac{1}{3}$.

Back brown, sides paler,
evidently silvery in life though
now stained darker. Iris
grayish. Fins brownish.

South Australia, Victoria, New
South Wales, Tasmania, New Zealand.

U. S. N. M.; no. 59928. Port Jackson,
N. S. W. Stead. Length 335 mm.

704
453. Doc Can Island. January 7,
1910. Length 86 mm.

4635. Grande Island Reef, Subig
Bay. January 8, 1908. Length 105 mm.

4812. Gomomo Island. December 3, 1909.
Length 87 mm.

22809 and 22810. Jolo. March 6 - 7, 1908.
Length 86 to 94 mm.

4740. Kapopoxang Island. December 28, 1909.
Length 73 mm.

550. Kayoa' Island. November 29, 1909.
Length 85 mm.

3642. Mactan Island. March 25, 1909.
Length 93 mm.

22043. Maganas, Lagonoy, Gulf of
Luzon. June 17, 1909. Length 77 mm.

9880 and 21446. Maitara Island.
November 26, 1909. Length 87 to 100 mm.

21287 and 4831. Malamipa Island.
September 8, 1909. Length 63 to 68 mm.

238

Scomberesox saurus (Walbaum)

Esox saurus Walbaum, Artedi Pisc., vol. 3, p. 73, 1792 (type locality: Cornwall, England; on Saury Pike Pennant, British Zool., vol. 3, p. 325, 17).
— Schneider, Syst. Ichth. Bloch, p. 394, 1801 (Cornwall; Mediterranean).

Scomberesox saurus Bleeker, Nederl. Tijds. Nederl. Indië, vol. 21, p. 56, 1860 (Cape of Good Hope). — Günther, Cat.

Fishes Brit. Mus., vol. 6, p. 257, 1866 (Cape of Good Hope). — Gillchrist, Marine Investig. South Africa, p. 152, 1901 (name). — Lempe, Deutsch. Südpolar Exped., Fische, vol. 15, p. 205, 1914 (between Cape of Good Hope and Kerguelen). — Barnard, Ann. South Afric. Mus., vol. 21, pt. 1, p. 259, fig. 16 (heads), June 1925 (St. Helena Bay, Table Bay and Cape Point to Mossel Bay).

Scomberesox saurus Borodin, Bull.
Vanderbilt Marine Mus., vol. 1, art. 2,
p. 46, 1930 (Red Sea).

Scomberesox camperii Lacépède, Hist. nat.
Poiss., vol. 5, pp. 344, 345, pl. 6, fig. 3, 1803
(type locality: no locality).

Sayris serrata Rafinesque, Carrat. Animal.
Sicil., p. 61, 1810 (type locality: Sicily).

Sayris recurvirostra Rafinesque, Carrat.
Animal. Sicil., p. 61, 1810 (type locality:
Sicily).

Sayris hians Rafinesque, Carrat. Animal.
Sicil., p. 61, pl. 9, fig. 1, 1810 (type locality:
Sicily).

Sayris bimaculatus Rafinesque, Carrat.
Animal. Sicil., p. 62, 1810 (type locality:
Sicily).

Sayris serratus Rafinesque, Carrat.
Animal. Sicil., p. 62, 1810 (on Rondelet).

Scomberesox storeri De Kay, New York
Fauna, vol. 3, p. 229, pl. 35, 1844
(type locality: Newfoundland ^{fig. 3,} Banks;
Massachusetts; New York).

Grammiconotus Costa, Annuario Mus.
Zool. Napoli, vol. 1, p. 55, pl. 1, fig. 4,
1864 (type locality: Naples).

Depth $8\frac{1}{2}$ to $9\frac{1}{2}$ (young); head $3\frac{4}{5}$ to $4\frac{1}{4}$, width 5 to 6. Snout $1\frac{3}{5}$ to $2\frac{1}{4}$ in head from snout tip; eye 4 to 9, $1\frac{2}{3}$ to $5\frac{2}{5}$ in snout, greater than interorbital in young to $1\frac{1}{4}$ or subequal with age; beak not completely closing basally, short in young, much longer with age and lower jaw longer; maxillary reaches $\frac{1}{2}$ to eye in young, $\frac{4}{5}$ with age, length from snout tip $1\frac{9}{10}$ to $2\frac{1}{4}$ in head from snout tip; interorbital subequal with age, low, nearly level. Gill rakers 9+41, upper or ceratobranchial rudimentary, others lanceolate or $1\frac{3}{5}$ in age.

Scales 115 to 120 in medial lateral series axially to caudal base; 14 or 15 above lateral line

18509. Cammahala Bay, Ragay Gulf,⁶⁶⁹
in small stream. March 11, 1909. Length
47 mm.

4748:

~~4748~~ Cebu market. August 27-
28, 1909. Length 31 to 37 mm. 5 examples.

A 1341. Loc Can Island. January 7, 1910.
Length 152 mm.

8243, 8248, 8249. Gaboraney Island,
Ragay Gulf, Luzon. March 9, 1909. Length
130 to 170 mm.

5195. Jolo market. March 7, 1908. Length
167 mm.

11677. Mariveles Bay. January 30, 1909.
Length 88 mm.

8425. Pandanon Island. March 23, 1909.
Length 136 mm.

4748 and 4753. Subig Bay. January 7, 1908.
3 examples. Length 24 to 92 mm. Black bar
between eyes and black above snout. Black
band from front of dorsal and first 3

to dorsal origin, 100 to 103
 predorsal or 70 to 73 forward
 from dorsal to occiput or
 opposite hind vertical edge of
 preopercle. Scales very caducous,
 most all fallen. Scales with
 D or 1 short basal radiating
 striae; circuli 16 to 70, not
 extended apically.

D. II, 8 or II, 9 — 5 or 6, first
 branched ray 5 to $5\frac{1}{4}$ in total
 head length; A. II, 10 or II, 11 — 6 or
 7, first branched ray 6 to $6\frac{1}{2}$;
 caudal 2 to $2\frac{4}{5}$; least depth of
 caudal peduncle $10\frac{3}{4}$ to $11\frac{1}{2}$;
 pectoral 4 to $4\frac{7}{8}$; ventral $4\frac{1}{5}$
 to $4\frac{9}{10}$.

Back drab brown, sides and
 below silvery white, line of
 demarcation high on side.

least depth of caudal peduncle $2\frac{3}{4}$ to 3; caudal truncate, hind edge slightly convex or expanded, $1\frac{2}{5}$ to $1\frac{1}{2}$; pectoral $2\frac{4}{5}$ to 3 in combined head and body; ventral $2\frac{3}{5}$ to $3\frac{1}{4}$.

Largely whitish. Broad blackish brown band from front of spinous dorsal, widening below to include pectoral base and all of postventral space, also extended below along front or lower edge of anal. Another similar band, little more inclined, from middle of spinous dorsal down to include posterior half of anal. Pectoral whitish, like caudal. Ventral black. Iris whitish.

Red Sea, Zanzibar, Mozambique, Natal, Mauritius, Réunion, Seychelles, India, Andamans, East Indies, Philippines, China, Japan, Riu Kiu, Queensland, Polynesia, Hawaii.

243

Iris silvery white. Dorsal and caudal pale brown, other fins still paler or whitish.

Atlantic Ocean, Mediterranean, southern Indian Ocean. Reported from the Red Sea by Borodin.

A. S. N. M., No. 13164. Cape Cod, Massachusetts. E. G. Blackford.
Length 270 mm.

703
11854. Caracaran, Batam Island.
June 8, 1909. Length 86 mm.

847. Cataringan Bay. April 18, 1908.
Length 102 mm.

3586. Cammahala Bay, Ragay Gulf.
March 11, 1909. Length 94 mm.

246 to 248. Caxisigan. December 29, 1909.
Length 88 to 100 mm.

7828. Cebu market. April 7, 1908.
Length 91 mm.

22147. Cebu market. August 28, 1909.
Length 68 mm.

7432. Dalanganem Island. April 8,
1909. Length 100 mm.

22937. Danawan Island, Mindanao.
August 9, 1909. Length 95 mm.

21456 and 21457. Danawan Island and
Si Amil Island. September 27, 1909.
Length 86 to 92 mm.

U. S. N. M., no. 13165. Cape Cod, ²⁴⁴
Massachusetts. E. G. Blackford.
Length 280 to 310 mm.

U. S. N. M., no. 19852. Wood's Holl,
Massachusetts. V. N. Edwards. Length
260 to 290 mm. 4 examples.

U. S. N. M., no. 19853. Wood's Holl.
V. N. Edwards. Length 265 to 274 mm.
3 examples.

U. S. N. M., no. 20751. Newport,
Rhode Island. Samuel Powell. Length
241 to 278 mm. 2 examples.

U. S. N. M., no. 22385. Halifax,
Nova Scotia? J. M. Jones. Length 373
mm.

U. S. N. M., no. 23770. Massachusetts.
U. S. F. Comm. Length 240? mm.

U. S. N. M., no. 23917. Lat. $44^{\circ}3'N$,
long. $58^{\circ}26'W$. G. H. Johnson. Length
373 mm.

702
14891 and 22114. Alimango Bay,
Burias Island. March 5, 1909.

Length 77 to 99 mm.

20488. Batan Island. June 5, 1909.
Length 80 mm.

3608. Biri Channel. June 1, 1909.
Length 88 mm.

1 example. Buana Bay, Talajit Island.
March 15, 1909. Length 127 mm.

1157. Busin Harbor. April 23, 1908.
Length 95 mm.

3621. Busin Harbor. March 7, 1909.
Length 87 mm.

288 and 3629. Busin Harbor. March 8,
1909. Length 76 to 92 mm.

6067. Pagayanes Island. March 31, 1909.
Length 88 mm.

3915 and 15077. Capulaan Bay, Pagbilao
Island. February 24, 1909. Length 66 to
94 mm.

U. S. N. M., no. 24727 to 24728.
Massachusetts. U. S. F. Comm. Length
273 to 278 mm. 2 examples.

U. S. N. M., no. 28615 and 28616.
Grand Banks. Gloucester Donation.
Length 280? to 283? mm. 2 examples.

U. S. N. M., no. 31826. Fifty miles
south of Gay Head, Massachusetts.
Collins. Length 310? mm.

U. S. N. M., no. 38747. St. Thomas,
West Indies. A. K. Ruse. Length 72
mm.

U. S. N. M., no. 40050. Naples.
Florence Museum. Length 255 mm.

U. S. N. M., no. 48453. Italy.
S. E. Meek. Length 185 to 195 mm.
2 examples.

U. S. N. M., 1 example. Mouth of Bay
of Chaleux, Gulf of St. Lawrence.
P. A. Taverner. Length 347 mm.

701

Kind edge of caudal very narrowly
whitish. Paired fins brown.

Red Sea, East Indies. In alcohol our
examples all show the dark opercular
border more contrasted than Bleeker's
figure, though most of the gray
spots have faded from the cheeks.
The anterior portion of the body is
also much paler and more contrasted.
The preopercular spine is quite variable,
often asymmetrical or short on one
side of the head and long on the
other.